SERVICE MANUAL

Affinity® Bed
Affinity® II Bed
From Hill-Rom®

Errata
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Product No. P3600, P3601, 3605, P3606

For Parts Or Technical Assistance
USA (800) 445-3720 Canada (800) 267-2337

Affinity Bed Service Manual

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NOTES:

Purpose

This manual provides requirements for the Hill-Rom Affinity Bed normal operation and maintenance. It also includes a parts list (in chapter 5) for ordering replacement components.

Audience

This manual is intended for use by only facility-authorized maintenance personnel. Failure to observe this restriction can result in severe injury to people and serious damage to equipment.

Organization

This manual contains seven chapters.

Chapter 1: Introduction

In addition to a brief description of this service manual, chapter 1 also provides a product overview.

Chapter 2: Troubleshooting Procedures

Repair analysis procedures are contained in this chapter. These procedures are used to gather information, identify the maintenance need, and verify the effectiveness of the repair.

Chapter 3: Theory of Operation

This chapter describes the application of the mechanical, electrical, and hydraulic systems employed in this product.

Chapter 4: Removal, Replacement, and Adjustment Procedures

Chapter 4 contains the detailed maintenance procedures determined necessary in chapter 2.

Chapter 5: Parts List

This chapter contains Hill-Rom's warranty, part-ordering procedure, and illustrated parts lists.

Chapter 6: General Procedures

Cleaning, preventive maintenance, and other general procedures are described in this chapter.

Chapter 7: Accessories

A list of additional products, that can be used in conjunction with the Hill-Rom Affinity Bed, is available in chapter 7. Some installation procedures for these accessories are also included.

Typographical Conventions

This manual contains different typefaces and icons designed to improve readability and increase understanding of its content. Note the following examples:

- Standard text—used for regular information.
- **Boldface text**—emphasizes a word or phrase.
- **NOTE:**—sets apart special information or important instruction clarification.
- The symbol below highlights a WARNING or CAUTION:

Figure 1-1. Warning and Caution Symbol

  - A WARNING identifies situations or actions that may affect patient or user safety. Disregarding a warning could result in patient or user injury.
  - A CAUTION points out special procedures or precautions that personnel must follow to avoid equipment damage.

- The symbol below highlights an electrical shock hazard WARNING:

Figure 1-2. Electrical Shock Hazard Warning

Introduction

Overview

This manual provides the information required for normal operation and maintenance of the Hill-Rom Affinity Bed. It also includes a complete parts list for ordering replacement components. The parts list is located in chapter 5.

Operating Precautions

Before operating the Affinity Bed, be sure that you have read and understand in detail the contents of this manual. It is important that you read and strictly adhere to the aspects of safety immediately following. Any reference to a side of the bed is from the patient's view lying in the bed on their back.

Specifications

Physical Description

See table 1-1 on page 1-9 for Affinity Bed specifications.

Table 1-1. Specifications

Feature	Dimension
Overall length	90" (228.6 cm)
Overall height - headboard - high position	53 1/4" (136 cm)
Overall height - low position (without mattress)	18 1/2" (47 cm)
Overall height - high position (without mattress)	35 3/4" (91.44 cm)
Total hilow travel	17 1/4" (44.45 cm)
Overall width (siderails down)	34" (86.4 cm)
Siderail length	28" (71 cm)
Clearance inside siderails	38" (96.5 cm)
Siderail height (without mattress)	13" (33 cm)
Mattress size	34" x 78" x 4" (86.4 cm x 198 cm x 10 cm)
Caster wheel	6" (15.2 cm)
Wheel base, center-to-center - length	50" (127 cm)
Wheel base, center-to-center - width - head end	24.5" (64.5 cm)
Wheel base, center-to-center - width - foot end	29.5" (75 cm)
Clearance under base - high position	5" (12.7 cm)
Clearance under base - low position	2.5" (6.35 cm)
Trendelenburg angle inclination	8^{o}
Maximum patient weight	500 lb (227 kg)
Foot section, maximum lift weight	400 lb (181.6 kg)
Head section, maximum lift weight	200 lb (91 kg)

Head Section Inclination

The bed is mechanized such that the patient or attendant may elevate the head section by voluntary selection of a finger touch activator. The head up/head down activators are of a momentary type. The activators are pictorially labeled to indicate their function. The activators are fixed in relation to the head section within easy access of both the occupant and attendant regardless of degree of inclination.

CPR Release

The head section is mechanized for emergency lowering. A releasing mechanism is included for rapid lowering. The release mechanism requires positive (intentional) action for release. The bed mechanism recognizes the de-coupling and automatically lowers the seat section and recouples the head mechanism. This ensures proper head section lifting after the emergency.

Foot Section Inclination

The bed is mechanized such that the patient or attendant may elevate the foot section by voluntary selection of a finger touch activator. The foot up/foot down activators are of a momentary type. The activators are pictorially labeled to indicate their function. The activators are fixed in relation to the head section within easy access of both the occupant and attendant regardless of degree of inclination.

High Low Sleeping Surface (Hilow)

The bed is mechanized such that a patient or attendant may raise or lower the sleeping surface to facilitate examination or bed ingress or egress. The activators are pictorially labeled and fixed in relation to the head section of the bed. The activators face toward the attendant position and are not accessible for occupant activation. The activators are a momentary type contact.

Mobility/Braking and Steer System

The bed is mounted on four precision bearing swivel type casters. Each caster has molded polyurethane wheels (older Affinity Beds used rubber wheels), minimum diameter 5" (127 mm) and minimum tread width 31/32", minimum stem diameter 1" (25.4 mm). Wheels have precision bearing axles and swivels for high mobility. They are easily removed for cleaning or replacing.

The caster braking system is activated by foot pedals located on either side of the bed to allow single foot operation to lock two casters (wheels and swivels).

Activation of the steer system locks the swivel on one caster (steer lock) to allow for easy steering of bed. The steer system is foot operated by pedals located on either side of the bed. Foot pedals for operation of the braking system and steering system are located as indicated in convenient, accessible locations on both sides of bed and are identified clearly as to proper operation of the central locking system.

Trendelenburg

Trendelenburg positioning to 8 degrees is achieved electro/mechanically from any bed height position by depressing one of two Trendelenburg handles. Trendelenburg handles are located near the head end of the bed under the head section. Depressing either one of the handles releases gas-assisted springs (cylinders) and allows for easy positioning. When the bed frame is too low to achieve full mechanical Trendelenburg positioning, the bed's electro/mechanical system automatically raises the bed frame to achieve full positioning.

Manual Operation

The bed is mechanized such that head, foot, or hilow positions may be manually moved in case of emergency, power failure, or remote location (e.g. hallway).

Lockouts

Lockouts are provided at the head end of the bed to inhibit patient or attendant operation of the siderail functions (inboard and/or outboard bed and air functions). SideCom features are unaffected by lockouts.

Proportional Pelvic Tilt

As the head section is raised, the seat section gradually tilts up from 0 to 15 degrees. This keeps the patient from gravitating to the foot end of the bed.

Headboard

The headboard is mounted to a metal frame with built-in handles which aid in steering control and increase mobility. The headboard assembly is removable.

Docking/Wall Protection

Standard roller bumpers, located at the head end of the bed, protect walls and headwall systems from damage.

CAUTION:
Do not position the head of the bed against a wall or beneath any fixtures. This is to prevent damage due to the arcing motion of the bed while the bed is being raised or lowered.

Siderails, Restraints, and Patient Monitoring

The bed is equipped with head section siderails as standard equipment. They can be placed in the up or down position. In the down position, the rails store under the frame of the bed providing a *zero transfer gap* for safe surface-to-surface transfer and better patient access. The bed is configured such that the following functions may be included as part of the siderails:

- Patient and attendant head, foot, and hilow actuator
- Nurse call activator
- Entertainment center actuator (lighting, TV, and radio)
- Mattress controls

The siderails should always be in a full upright position and latched when a patient is unattended. When raising the siderails, an audible *click* will indicate that the siderail is completely raised and locked in place.

We recognize that certain healthcare situations may indicate the need for specialized siderail configurations. In response to this need we offer, upon request, several siderail accessories.

Siderails are intended to be a reminder, **not a patient restraining device**. Appropriate medical personnel should determine the level of restraint necessary to ensure a patient will remain safely in bed. Consult the restraint manufacturer's instruction for use to verify the correct application of each restraining device.

Whenever high profile patients (typically, the frail, elderly, and medicated or confused) are involved, Hill-Rom recommends the following minimum actions:

- Develop guidelines for all high profile patients that indicate:
  - Which patients should be restrained and the appropriate restraint to utilize.
  - The proper method to monitor a patient, whether restrained or not, including time interval, visual check of restraint, etc.
- Develop training programs for all caregivers concerning the proper use and application of restraints.
- Maintain the bed at its lowest position whenever a caregiver is not in the room.

Dust Covers

All bed mechanisms are enclosed to protect them from damage, increase asepsis control, and aid housekeeping efficiencies in the patient room.

SideCom Communication System

The SideCom Communication System allows integration of nurse call and/or entertainment (TV and radio) in the siderails.

Air Supply System

Major components in the air supply system include:

- Air compressor
- Manifold solenoid block
- Mattress drive circuit board
- Air mattress

Electrical Description

The electrical power system is insulated from the metal parts of the bed. No additional electrical components, such as isolation transformers, are required to make this bed meet applicable electrical codes. All patient support surfaces are fully grounded through a three-wire power cord having a hospital grade 3-prong grounded plug.

Each bed is factory tested for complete operation with and without load. Each bed is tested for insulation integrity and micro leakage currents. Before shipment, each bed must indicate less than 45 micro amperage leakage current ungrounded for P3600/P3601 beds. P3605/P3606 beds must indicate less than 75 micro amperage leakage current grounded.

The supply cord is #16 AWG low leakage 3 conductor type STO. It extends nine and one half feet from the head end of the bed. The supply cord and attachment plug cap are UL and CSA listed hospital grade. The motors have manual crank capability to allow operation in the event of power failure.

All electrical components of this bed have been UL and CSA approved for this application.

The bed is equipped with a night light that automatically activates as the ambient light decreases. The light illuminates the foot fall area under the bed. The light can be turned off manually by a switch at the head of the bed.

Motors

There are three individual motors to power the separate functions of the bed. These motors have the following specifications:

Hilow (110 - 120 volt)

- 3.0 amps maximum (with 30.0 MFD capacitor)
- Permanently lubricated
- Totally enclosed
- Single phase
- Overload protected with automatic reset thermal
- 115 volts AC, 60 hertz
- 1.90 low limit operating amperage

Hilow (220 - 240 volt)

- 1.25 amps maximum (with 10 MFD capacitor)
- Permanently lubricated
- Totally enclosed
- Single phase
- Overload protected with automatic reset thermal
- 220 volts AC, 50 hertz
- 0.92 low limit operating amperage

Head and Foot (110 - 120 volt)

- 1.95 amps maximum (with 27.5 MFD capacitor)
- Permanently lubricated
- Totally enclosed
- Single phase
- Overload protected with automatic reset thermal
- 115 volts AC, 60 hertz

Head and Foot (220 - 240 volt)

- 0.85 amps maximum (with 5 MFD capacitor)
- Permanently lubricated
- Totally enclosed
- Single phase
- Overload protected with automatic reset thermal
- 220 volts AC, 50 hertz

Air Supply System

The air system assembly has the following specifications (models P3605 and P3606 use a 230V to 115V stepdown transformer):

- 0.55 amps max., (60VA)
- Single phase
- 230 volt AC input, 115 volts AC output, 50/60 hertz

Air Compressor (original style)

- 0.38 amps max., 0.00 PSI back pressure
- Permanently lubricated
- Totally enclosed
- Single phase
- 115 volts AC, 50/60 hertz

Air Compressor (new style)

- 0.6 amps
- Permanently lubricated
- Totally enclosed
- Single phase
- 115 volts AC, 60 hertz

Siderail Controls

Patient and attendant operation of the various functions of this bed are accomplished by means of finger touch switches located in a convenient fixed position at both sides of the bed. These controls are affixed with the movable head section to give easy access as well as visual contact with the head and foot operating button, irrespective of the position of the head section elevation. The switch controls are electronically interlocked to prevent electrical damage to the motor caused by contradictory direction signaling to the motor. The hilow controls are located for visual contact and operation only by nursing personnel, doctors, etc. attending to the patient.

Head

Head section operating controls are visually identifiable to both the patient and attendant by graphic symbols. The switches are separate momentary type switches identified for elevation and down travel of the head section.

Foot

The foot lift patient controls, identified by symbols, are positioned and readily visible to both the patient and attendant. The up/down travel of the foot section is controlled by separate momentary type switches.
On the original style bed, the foot section travel pauses when it reaches the flat or bed level position, indicating the bed level position. Travel then proceeds to the desired position, providing the foot section switch is actuated. This feature is removed in the new style bed.

Hilow

The hilow controls are pictorially labeled to indicate their function and are in immediate visual contact with the nurse/attendant. They contain a separate momentary type up switch and down switch.

Lockout

As prescribed by the attending physician, this bed has the capabilities of locking out the inboard and/or outboard hilow, head, foot, and air system functions. These lockouts are located at the head end of the bed's main frame. The lockouts interrupt the patient/attendant siderail controls until the lockout switch is turned off.

Printed Circuit Boards

All P.C. board functions are tested at the completion of circuit board assembly and at final bed assembly. A line transient filter is included to protect the boards from excessive line surges.

Model Identification

See table 1-2 on page 1-18 for Affinity Bed model identification.

Table 1-2. Model Identification

Model Number		Description
115 Volt	**230 Volt**	
P3600	P3605	Affinity Bed with v-cut seat
P3601	P3606	Affinity Bed with u-cut seat

Bed Versions

See table 1-3 on page 1-18 for Affinity Bed version description.

Table 1-3. Bed Version Description

Bed Version	Description
A	-Cable type brake/steer -Brake/steer pedal is offset from the base frame cross member (see figure 5-1 on page 5-14) -Rhombus rubber casters—silver wheels -Placenta basin is the smallest of Affinity Beds
B	-Linkage (no cable) type brake/steer -Brake/steer pedal is in line with the base frame cross-member pivot tube -Rhombus rubber casters -Larger and deeper placenta basin compared to version “A”
C	-Tente (profiled wheels) casters -New top rail material on the siderails
D	-New larger and deeper placenta basin -New “International” graphics on the controls and levers -No foot pause
EA	-“E” version bed includes the original lift off foot section
EB	-“E” version bed includes the new slide off foot section

Siderail/Pendant Option Identification

Hill-Rom offers basic siderail options with the Affinity Bed. Provide the serial number of your bed when ordering option parts. The siderail option will be noted on the purchase order record. See table 1-4 on page 1-19 for siderail options and descriptions.

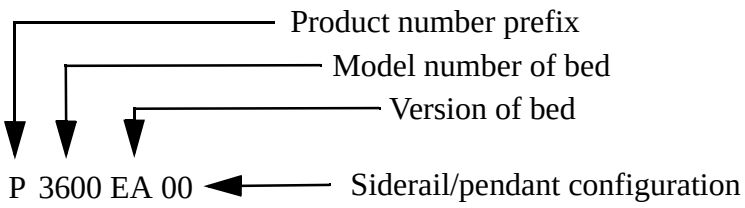


Table 1-4. Siderail Option identification

Siderail Option	Description
00	Bed and air functions
03	Bed functions/nurse call/entertainment/lighting
07	Bed and air functions/nurse call/entertainment/lighting
08	No bed functions present - pendant control only
09	Bed functions only

General Operation

The Hill-Rom Affinity Bed incorporates three independent motors to achieve the following operational features:

- Bed height - up/down
- Foot section - up/down
- Head section - up/down (seat section automatically tilts with head section operation)

These features are governed by circuit board logic and controlled by the use of the optional siderail bed controls or hand held, six function pendant. Each motor is equipped with a port for manual operation of the bed using the hand crank found at the end of the bed. Use of the hand crank should be limited to situations such as emergencies, power failure, or bed maintenance and repair.

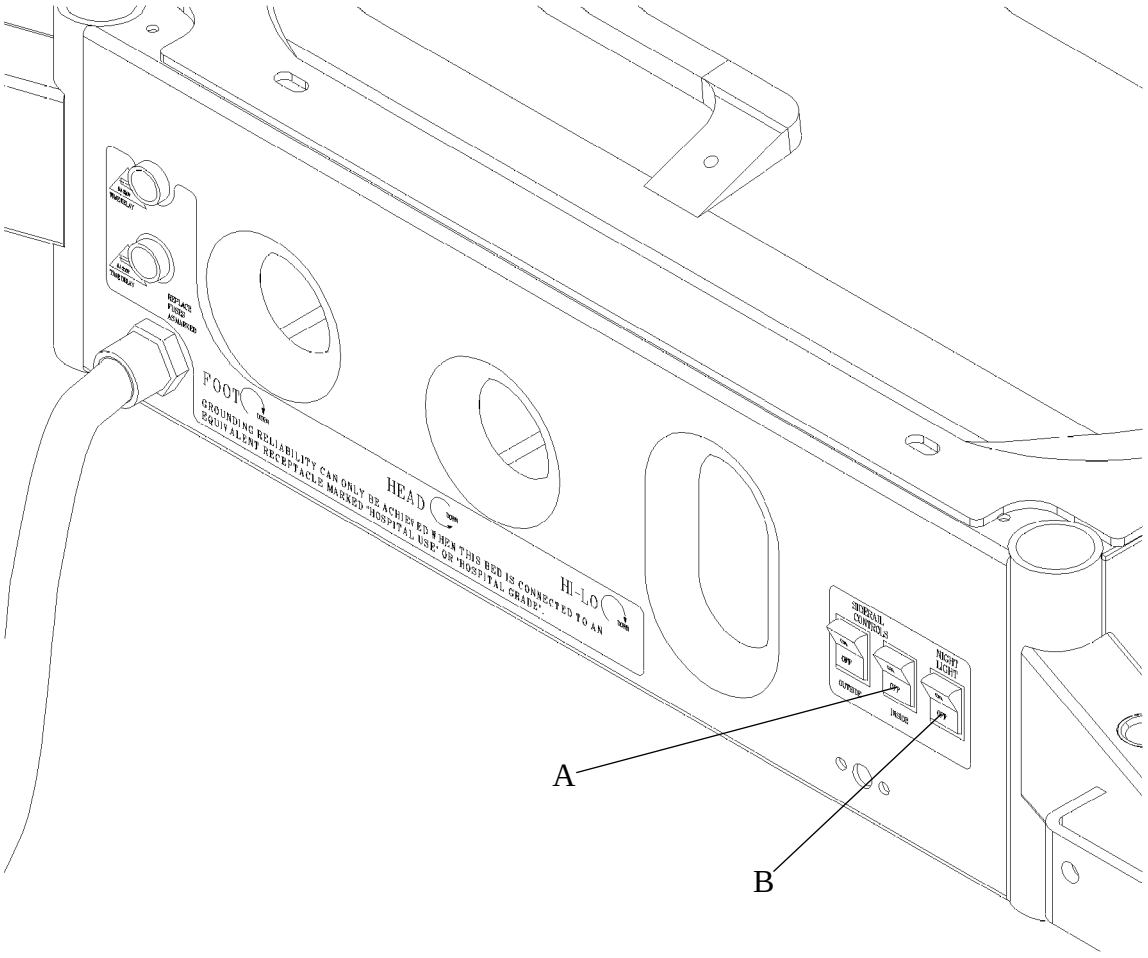
Proportional Pelvic Tilt

As the head section is raised, the seat gradually tilts up from 0 to 15 degrees. As the head section is lowered, the seat gradually returns to a flat position.

Lockout Switches

Lockout control switches (A) are located at the head end of the bed on the frame (see figure 1-3 on page 1-21). These controls are used to deactivate the patient (inboard) and/or attendant (outboard) siderail controls as well as the automatic night light switch (B).

Figure 1-3. Lockout Switches



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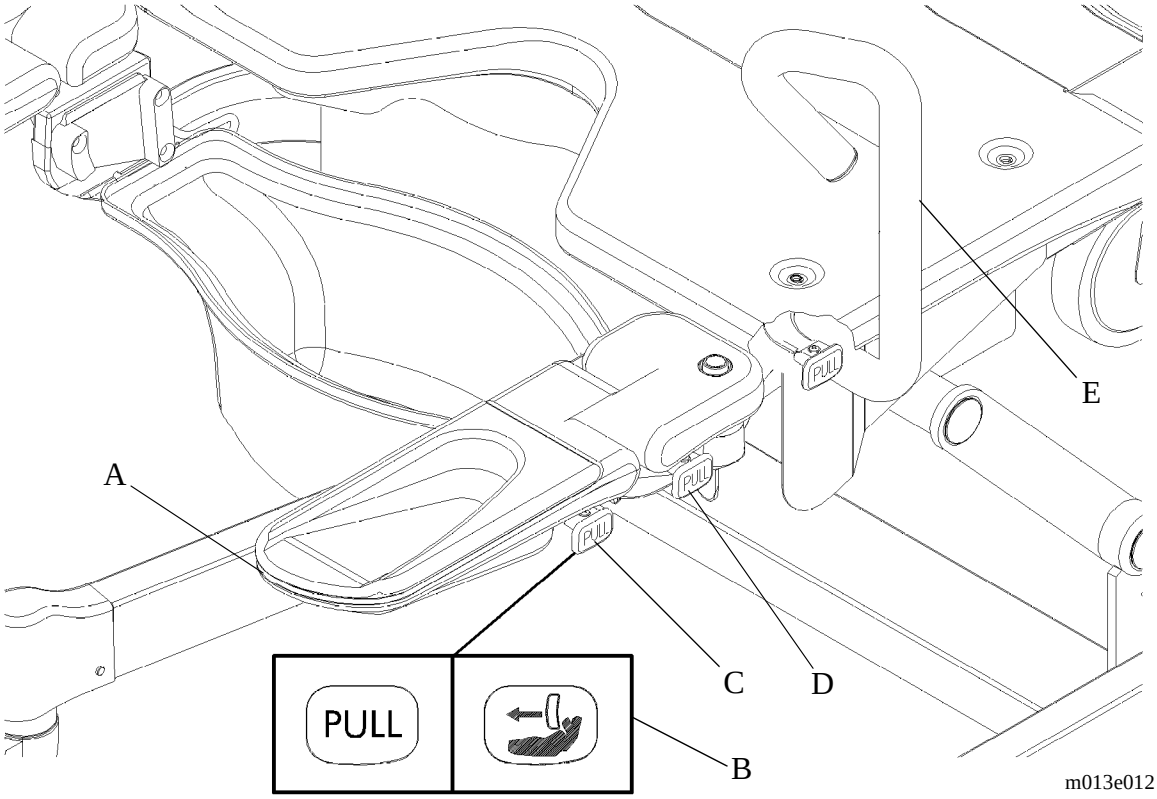
Night Light

The night light is located under the bed. A photocell control automatically turns the light on when the room darkens and turns it off when it gets brighter. The light can be turned off manually by an attendant using a switch (B) located at the head end of the bed.

Foot Support Assemblies

The Hill-Rom Affinity Bed is equipped with built-in foot support (A) assemblies designed to remain on the unit during normal usage. The assemblies can be simultaneously positioned up or down, through use of the motor powered foot section yoke. This foot section yoke controls the overall height up and down. Each support can be independently positioned by using the mechanical release latches at the supports (see figure 1-4 on page 1-22).

Figure 1-4. Foot Support



The following positional adjustments can be made:

- To tilt the patient's feet upward, lift up under the toe of the foot support.
- To lower, lift up under the toe of the foot support, and pull (B) the release latch (C) located under the foot support. Lower to the desired height.
- To position the patient's legs, pull the release latch (D), and rotate the foot support.
- To return to the storage position, pull the release latch (D) again, and return the supports to the inward position.
- To raise the foot supports simultaneously, push the foot up control until the desired level is reached.
- To lower the foot supports simultaneously, push the foot down button until the desired level is reached.

Each foot support can be easily removed from the bed by lifting the foot support straight up and off of its vertical mounting shaft.

Labor Grips

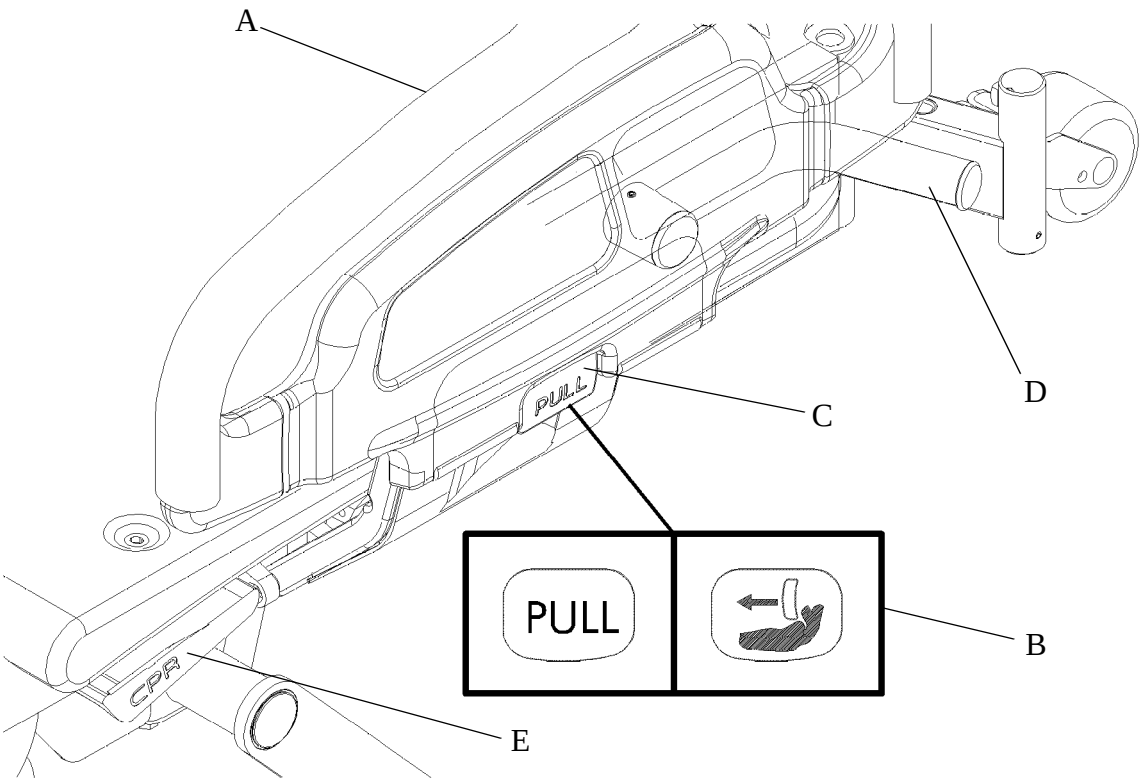
To raise the labor grip (E), grasp the grip and rotate it up from under the bed until it clicks. This signals that it has locked into position. Ensure the labor grip is properly locked by giving it a tug.

To lower the labor grip, pull the release handle, and lower the grip under the bed.

Siderails

To raise the siderails (A), grasp the top center of the siderail and pull out and up from beneath the bed (see figure 1-5 on page 1-24). Ensure the siderail is up and locked into position by giving it a gentle tug.

Figure 1-5. Siderails



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To lower/store the siderail, pull (B) the release handle (C), and allow the siderail to lower into the down or storage position.

The siderail stores in a position that does not extend outward from the width of the bed. This feature aids in preventing transfer gaps when two beds are placed side-by-side.

Trendelenburg Operation

The Trendelenburg function is engaged by the Trendelenburg handles (D). Handles are located on either side of the bed beneath the head section.

To place the sleep surface in Trendelenburg position, push down on the handle, and guide the bed to the desired angle. If the desired Trendelenburg position cannot be achieved because the bed height is too low, the bed's hilow function will automatically raise, with the bed plugged in, until the proper position is reached.

To return the bed to the level position, pull up on the handle. Mechanical limits will stop the travel when the sleep surface is level. Quickly release it when the bed is in the desired position.

Depending on the position of the head section and the weight of the patient, the amount of activation force required to place the bed either, in or out of Trendelenburg varies. For example: With a patient occupying the bed, and the head section raised to 45°, the bed will easily go out of Trendelenburg verses going into Trendelenburg. With a patient occupying the bed, and the head section in the flat position, the bed will easily go into Trendelenburg verses going out of Trendelenburg.

CPR Release

A CPR release handle (E) is located on either side of the bed, beneath the head section. To operate, pull the CPR handle (E) and hold. With a patient in the bed, the head section will lower to a flat position within 7 seconds.

The Integrated Air Support System

The integrated air support system allows the patient or attendant to select the desired level of firmness in the lumbar and seat sections of the mattress. Both the patient and attendant can control these functions from the siderail. The lumbar bladder, when fully inflated, appears as a large round bump in the mattress. The seat bladder, when fully inflated, does not have a specific appearance. Proper operation of the seat lumbar is best determined by lying on the bed and activating the seat inflate function.

Seat Section Mattress

To inflate the seat section, press either of the seat firm buttons, located on the siderail panel, until the desired firmness is achieved.

To deflate the seat section, press either of the seat soft buttons, located on the siderail panel, until the desired softness is achieved.

Auto Inflate

To automatically inflate the seat section, press the auto inflate button once. The seat section will inflate for approximately 26 seconds and then automatically stop inflation.

If a complete inflation cycle is not necessary, press the auto inflate button a second time to stop inflation.

NOTE:
The original style air system assembly operates the compressor in both inflate modes and the lumber deflate mode.

The new style air system assembly operates the compressor only in the inflate modes.

Back Section Mattress

To inflate the lumbar section, press either of the back firm buttons, located on the siderail panel, until the desired firmness is achieved.

To deflate the lumbar section, press either of the back soft buttons, located on the siderail panel, until the desired softness is achieved.

Motor Assemblies

Thermals

Thermals are an integral part of the motors, protecting them in the event there is an overload condition. They stop the motor automatically if the temperature reaches 125 °C. The motor will not run again until the thermal is reset. All three Affinity Bed motors are equipped with automatic thermal resets that allow the motor to operate after it has cooled down. The head and foot motors are the same and interchangeable. The hilow motor is not interchangeable.

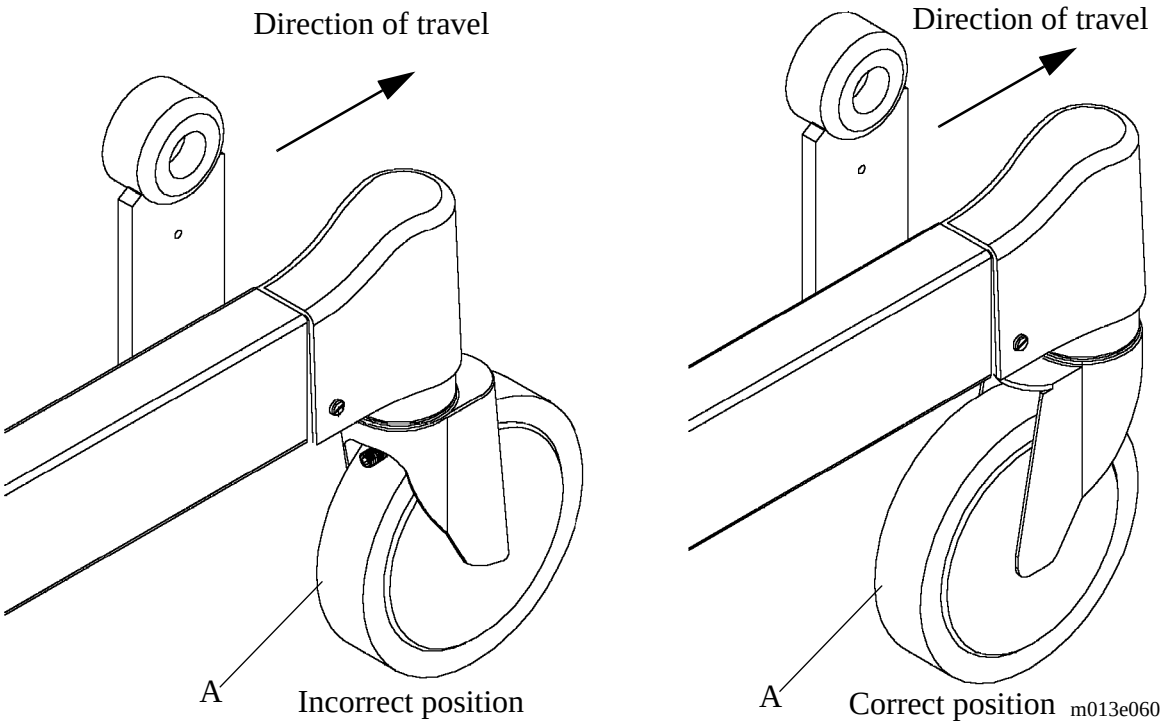
Brake and Steer Pedals

Placing the brake/steer pedal in steer locks the right side, head end caster into a position that is parallel to the bed. When transporting the bed, the caster should trail the direction of travel. This trailing position is when the center of the caster's wheel axle is behind the caster stem during transport.

If the caster is leading the direction of travel, reposition it. Do this by placing the brake/steer pedal in neutral, swivel the caster 180 degrees, and place the brake/steer pedal back in the steer position.

WARNING:
A bed that is transported with the steer caster (A) locked into an incorrect position can drift from side-to-side during transport (see figure 1-6 on page 1-27).

Figure 1-6. Steer Caster Position



NOTE:
Ensure the steer caster is locked into the “trailing” position, in relation to the direction of travel.

Safety Tips

Train and educate your staff on the hazards associated with electric beds. Do not allow personnel to have their entire body below the sleep surface and within the confines of the bed. Unplug the bed from its power source prior to cleaning or servicing it. If service personnel need to get under the bed, they must block up the hilow portion as an added precaution.

We urge you to incorporate these safety tips into your procedures for the safety of both patients and staff.

Bed Position

To reduce the severity of falls by patients, always leave the bed in the low position when the patient is unattended.

Siderails

Leave the siderails fully up and locked when the patient is left unattended. When raising the siderails, be sure that you hear the click that signals the up and locked condition. Give the siderails a tug to check that they are firmly in position.

Siderails are intended as a reminder, not a restraint device. Appropriate medical personnel should determine the level of restraint necessary to ensure a patient will remain safely in bed.

Brake and Steer Pedals

Always keep the casters in the brake position when the bed is occupied. Patients often use the bed for support when getting in or out of bed and serious injuries can result if the bed moves. After brakes are set, rock the bed gently to ensure that they are locked. Put the casters in the steer mode when moving the bed. This will make the bed easier to position or transport.

Fluids

When massive spills occur in the area of the circuit board and motors, immediately:

1. Unplug the bed from its power source.

2. Take care of the patient.

3. Clean the fluid from the bed.

4. Have maintenance check out the bed completely. Fluids can short out controls, making the bed inoperable or cause the bed to operate erratically. Component failure caused by fluids can even cause the bed to operate without warning, causing injury.

5. Do not place the bed back into service until it is unquestionably dry and tested safe to operate.

Water Mattress

The excessive weight associated with water mattresses puts an undo stress on the motor drives. In most cases, the patient's weight plus the water mattress weight exceeds the recommended bed capacity. Even more important is the fact that water mattresses are subject to rupture, which would allow large amounts of water to come into contact with the electrical components of the bed. We recommend not using water mattresses.

Lockout Switches

Whenever a patient or visitor should be restricted from operating the siderail controls, activate the appropriate lockout switch located at the head end of the bed (on the main frame). The lockout switches are for the convenience of the staff and the safety of the patient. Use them when appropriate.

CPR Release

Only healthcare professionals should use the emergency CPR release. The two release handles are located under the head section of the bed, near the seat section.

To activate the CPR release, pull the handle away from the bed. Continue to pull out on the handle until the head section is flat. When this is complete, attend to the patient. The bed will automatically flatten the head and knee sections and reset itself to be ready to use after the emergency.

Warnings, Shock Hazards, and Cautions

WARNING:
Only facility-authorized maintenance personnel should troubleshoot the Affinity Bed. Troubleshooting by unauthorized personnel could result in personal injury or equipment damage.

WARNING:
Unplug the bed from its power source before checking ohms/resistance measurements. Failure to disconnect line voltage to the bed can damage the VOM.

WARNING:
Only facility-authorized maintenance personnel should perform preventive maintenance on the Affinity Bed. Preventive maintenance performed by unauthorized personnel could result in personal injury or equipment damage.

WARNING:
You must use the 2 x 4s to support the bed. The bed will fall during this procedure if not supported. Failure to do so could result in personal injury or equipment damage.

WARNING:
Slide the foot limit switch housing in small movements. Equipment damage could occur.

WARNING:
The head end of the main frame is supported by the two Trendelenburg cylinders. Any servicing will require a support device be placed just beneath the head end of the main frame. Failure to do so could result in personal injury or equipment damage.

WARNING:
Failure to properly mount the foot section to the slide receptacles may cause equipment damage or personnel injury.

WARNING:
Ensure the bed is stable before removing the caster. Failure to do so could result in personal injury or equipment damage.

WARNING:
Powered bed mechanisms can cause serious injury. Operate the bed only with persons clear of mechanisms.

WARNING:
Unplug the bed power cord from the wall outlet during service or cleaning. Refer to the *Affinity Bed In-Service Manual* and specific sections in this service manual for additional precautions.

WARNING:
Ensure all electrical/mechanical loads are removed prior to maintenance/repair of the bed's drive system or other mechanical assemblies.

WARNING:
When using the manual crank during power failure, unplug the bed power cord from the wall outlet so that unexpected resumption of power will not rotate the handle.

WARNING:
Follow the product manufacturer's instructions. Failure to do so could result in personal injury or equipment damage.

WARNING:
Inspect the pivot point fastener semi-annually. Failure to do so could result in personal injury or equipment damage.

WARNING:
Use primers with adequate ventilation. Avoid skin contact and prolonged or repeated breathing of vapors. Do not allow primers to be trapped under rings, watch bands, etc. Observe all directions on the primer can.

SHOCK HAZARD:
Unplug the unit from its power source. Failure to do so could result in personal injury or equipment damage.

SHOCK HAZARD:
Do not expose the unit to excessive moisture or personal injury or equipment damage could occur.

SHOCK HAZARD:
The high voltage capacitors installed in the electrical system present an electrical shock hazard and must be handled with care during service procedures. Unplug the bed from its power source. Perform standard electrical service procedures to discharge the capacitors before attempting service within the circuit board enclosure. Adhere to all electrical safety precautions when servicing the bed's electrical system.

CAUTION:
Do not use harsh cleaners, solvents, or detergents or equipment damage could occur.

CAUTION:
Mattress damage caused by improper draping and/or cleaning procedures is not covered by warranty.

CAUTION:
Standard OB packs and paper drapes will not keep the sheets dry.

CAUTION:
Do not use silicone-based lubricants or equipment damage could occur.

CAUTION:
Ensure the night light is not being damaged when the bed is being lowered.

CAUTION:
Use care to prevent deforming the ball return tube on the ball screw nut

assembly. Do not pry or clamp on the ball return tube. Also, do not rotate the ball screw nut too closely to the end of the threaded area of the screw.

CAUTION:
Use a suitable press to remove the spiral and roll pins. Do not use a hammer and punch to remove these pins or equipment damage could occur.

CAUTION:
Use care when handling the circuit board (P.C. board). Handle P.C. boards by their edge. Do not touch the components on the board. This should prevent unnecessary static damage to the components.

CAUTION:
Adhere to all electrical safety precautions when servicing the bed's electrical system or equipment damage could occur.

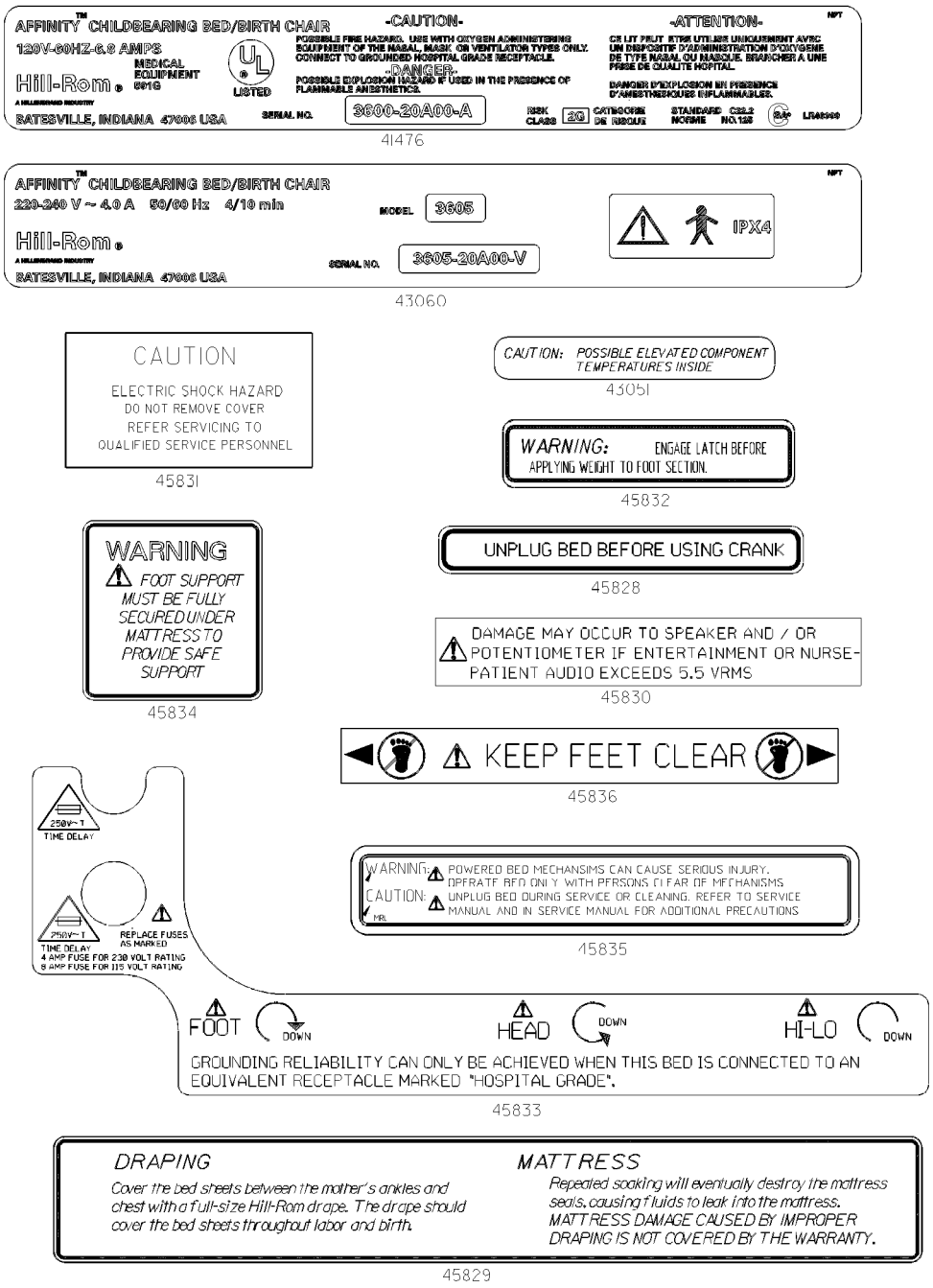
CAUTION:
Do not attempt to twist or pry the plug from the shroud or possible damage to the shroud could occur.

CAUTION:
Support the siderail during the removal procedure or equipment damage could occur.

CAUTION:
Ensure the siderail does not drop when the bolts are removed or possible equipment damage to the cable wiring going to the siderail switch could occur.

Warning and Caution Labels

Figure 1-7. Warning and Caution Labels


AFFINITY™ CHILDBEARING BED/BIRTH CHAIR
120V-60HZ-6.0 AMPS
MEDICAL EQUIPMENT
Hill-Rom
BATESVILLE, INDIANA 47006 USA
SERIAL NO.
3600-20A00-A
-CAUTION-
-DANGER-
-ATTENTION-
41476
AFFINITY™ CHILDBEARING BED/BIRTH CHAIR
220-240 V ~ 4.0 A 50/60 Hz 4/10 min
MODEL 3605
Hill-Rom
BATESVILLE, INDIANA 47006 USA
SERIAL NO. 3605-20A00-V
IPX4
43060
CAUTION
ELECTRIC SHOCK HAZARD
DO NOT REMOVE COVER
REFER SERVICING TO
QUALIFIED SERVICE PERSONNEL
45831
CAUTION: POSSIBLE ELEVATED COMPONENT TEMPERATURES INSIDE
43051
WARNING: ENGAGE LATCH BEFORE APPLYING WEIGHT TO FOOT SECTION.
45832
WARNING
FOOT SUPPORT MUST BE FULLY SECURED UNDER MATTRESS TO PROVIDE SAFE SUPPORT
45834
UNPLUG BED BEFORE USING CRANK
45828
DAMAGE MAY OCCUR TO SPEAKER AND / OR POTENTIOMETER IF ENTERTAINMENT OR NURSE-PATIENT AUDIO EXCEEDS 5.5 VRMS
45830
KEEP FEET CLEAR
45836
250V~T
TIME DELAY
REPLACE FUSES AS MARKED
TIME DELAY
4 AMP FUSE FOR 230 VOLT RATING
8 AMP FUSE FOR 115 VOLT RATING
WARNING: POWERED BED MECHANSIMS CAN CAUSE SERIOUS INJURY. OPERATE BED ONLY WITH PERSONS CLEAR OF MECHANISMS
CAUTION: UNPLUG BED DURING SERVICE OR CLEANING. REFER TO SERVICE MANUAL AND IN SERVICE MANUAL FOR ADDITIONAL PRECAUTIONS
45835
FOOT DOWN
HEAD DOWN
HI-LO DOWN
GROUNDING RELIABILITY CAN ONLY BE ACHIEVED WHEN THIS BED IS CONNECTED TO AN EQUIVALENT RECEPTACLE MARKED "HOSPITAL GRADE".
45833
DRAPING
Cover the bed sheets between the mother's ankles and chest with a full-size Hill-Rom drape. The drape should cover the bed sheets throughout labor and birth.
MATTRESS
Repeated soaking will eventually destroy the mattress seals, causing fluids to leak into the mattress. MATTRESS DAMAGE CAUSED BY IMPROPER DRAPING IS NOT COVERED BY THE WARRANTY.
45829

m013e044

Chapter 2
Troubleshooting Procedures

2

Chapter Contents

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Getting Started

WARNING:
Only facility-authorized maintenance personnel should troubleshoot the Affinity Bed. Troubleshooting by unauthorized personnel could result in personal injury or equipment damage.

Begin each procedure in this chapter with step 1. Follow the sequence outlined (each step assumes the previous step has been completed). In each step, the normal operation of the product can be confirmed by answering **Yes** or **No** to the statement. Your response will lead to another step in the procedure, a repair analysis procedure (RAP), or a component replacement. If more than one component is listed, replace them in the given order.

Start with **Initial Actions** to begin gathering information about the problem.

Perform the **Function Checks** to isolate or identify a problem and to verify the repair after completing each corrective action (replacing or adjusting a part, seating a connector, etc.).

Perform the **Final Actions** after the Function Checks to verify the repair.

If troubleshooting procedures do not isolate the problem, call Hill-Rom Technical Support at (800) 445-3720 for assistance.

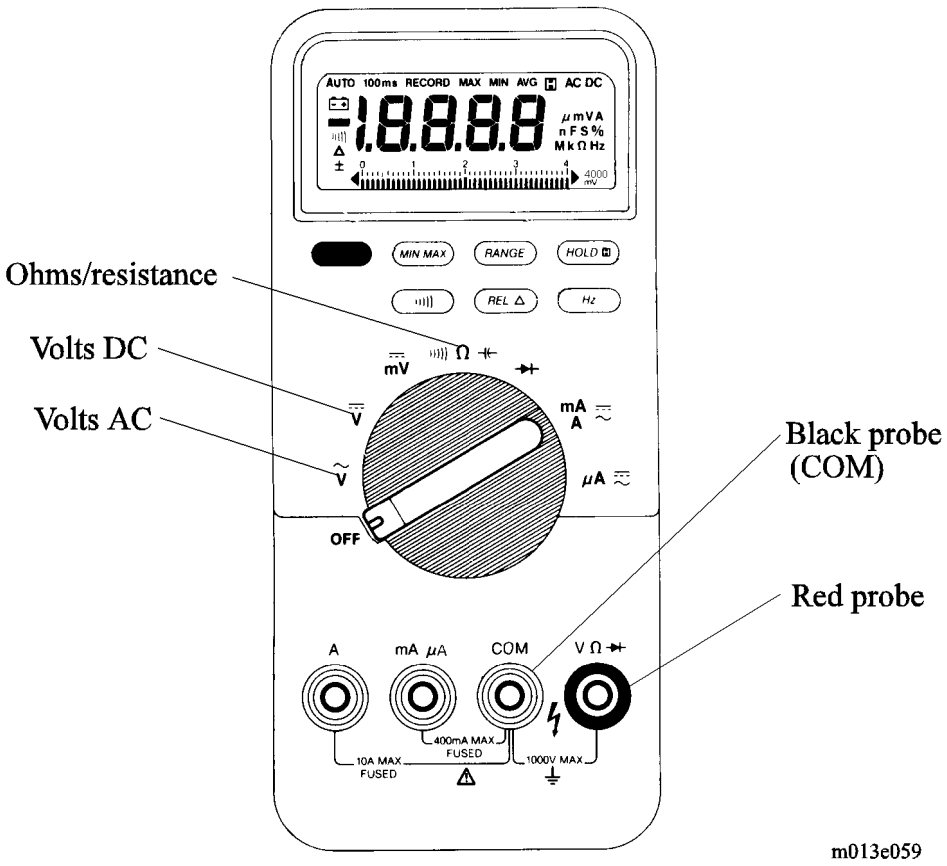
Test Equipment

2

You will need a digital or analog multimeter (VOM) with fine tip probes to troubleshoot the Affinity bed. The following section describes the three basic electrical functions that you will be testing with the VOM.

WARNING:
Refer to your VOM owner's manual for complete and detailed information regarding the operation of your VOM.

Figure 2-1. VOM



Electrical Functions

Figure 2-1 on page 2-4 represents a common digital VOM. The three basic electrical functions that you will test are alternating current (AC), direct current (DC), and ohms/resistance.

Figure 2-1 on page 2-4 displays the correct connection for the fine tip probes. The red probe plugs into the port marked "V Ω." The black probe plugs into the port marked "COM." The troubleshooting repair analysis procedure (RAP) indicates where on the bed to connect the red probe and black probe.

WARNING:
Unplug the bed from its power source before checking ohms/resistance measurements. Failure to disconnect line voltage to the bed can damage the VOM, cause equipment damage or personal injury.

Initial Actions

Use Initial Actions to gather information from operators concerning problems with the Affinity Bed. Note symptoms or other information concerning the problem that the operator describes. This information helps identify the probable cause.

1. Someone who can explain the problem is available.

   Yes **No**
   ↓ → Go to “Function Checks” on page 2-10.

2. Ask that person to demonstrate or explain the problem. The problem can be duplicated.

   Yes **No**
   ↓ → Go to “Function Checks” on page 2-10.

3. The problem is a result of improper operator action.

   Yes **No**
   ↓ → Go to “Function Checks” on page 2-10.

4. Instruct the operator to refer to the procedures in the *Affinity Bed In-Service Manual*. Perform the “Function Checks” on page 2-10 to ensure proper operation of the Affinity Bed.

Motor/Drive Rapid Troubleshooting Procedure

1. Perform the following:
   - Place head, foot, and hilow motor into a mid height position. When necessary, unplug the bed from its power source, and use the manual crank to position a defective drive.
   - Ensure the bed is out of Trendelenburg.
   - Place lockout switches in the "ON" or unlocked position to enable bed functions to operate.
   - Ensure the bed is plugged into an proper power source.

2. Activate the suspect faulty motor/drive function on one side of the siderail. The function operates properly.

   Yes **No**
   ↓ → Go to step 4.

3. Activate the suspect faulty motor/drive function on the opposite side of the **same** siderail. The function operates properly.

   Yes **No**
   ↓ → Go to step 4.

4. Operate the same motor/drive function from both inboard and outboard controls in the opposite siderail. The problem is isolated to either the inboard or outboard controls of both siderails.

   Yes **No**
   ↓ → Go to step 6.

5. The problem is in the lockout circuit. Inspect the connectors and wiring between and including the lockout switch and the digital board. Repair loose connections, defective lockout switch, or replace defective digital board (refer to procedure 4.19). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 6.

6. The problem occurs when operated by both the inboard and outboard controls of the same siderail.

   Yes **No**
   ↓ → Go to step 8.

7. The problem is located between and including the siderail circuit board and the digital board. Perform an inspection of the siderail circuit board, wires,

and connectors between and including the digital board and suspect siderail.

8. Problem occurs regardless of which switch is activated.

   Yes **No**
   ↓ → Replace the defective siderail switch (refer to procedure 4.26). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 9.

9. Observe a clicking sound originating from the bed drive and rectifier circuit board (under the top motor cover). One or two relay clicks are heard.

   Yes **No**
   ↓ → Problem is located in the low voltage system. Check the components and wiring between and including the siderail circuit board and the digital board. If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 10.

10. Two relay clicks are heard activating.

    Yes **No**
    ↓ → If only one relay click is heard activating, go to step 14.

11. Visually inspect the suspect motor while activating the suspect function. The motor can be observed moving slightly when the switch is operated but does not raise or lower the associated lift components.

    Yes **No**
    ↓ → Go to step 17.

12. The suspect motor and drive is binding. Perform a visual inspection of the drive and associated lift arm components. A source of binding is located.

    Yes **No**
    ↓ → Remove and replace the faulty drive. See the associated procedure in chapter 4.

13. Repair the suspect area.

14. Operate another motor function on the bed. At least one other motor function operates.

    Yes **No**
    ↓ → The problem is in the supervisory circuit located between and including the digital board and the K2 Supervisory circuit. Replace the bed drive and rectifier circuit board (refer to procedure 4.18). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 15.

15. The problem is between and including the limit switch (the limit which would be associated with the function that is being activated) and the digital board. For example, if hilow down is not operating, the hilow down limit switch and associated circuit or wiring may be inoperative or out of adjustment.

    Yes **No**
    ↓ → Go to step 17.

16. Repair or adjust the limit switch and associated wiring. Refer to the associated limit switch procedure in chapter 4. If this solves the problem, go to “Final Actions” on page 2-20. Otherwise, continue to step 17.

17. Connect the suspect defective motors male connector to an adjacent motors female connector. Momentarily activate the adjacent motor by pressing the associated siderail switch. The suspect motor/drive operates.

    Yes **No**
    ↓ → Remove and replace the drive. Refer to the associated motor drive procedure in chapter 4. If this solves the problem, go to “Final Actions” on page 2-20. Otherwise, continue to step 18.

18. The problem is located between and including the bed drive and rectifier circuit board and the motor connector. Replace the bed drive and rectifier circuit board (refer to procedure 4.18).

    This solves the problem.

    Yes **No**
    ↓ → Go to “Function Checks” on page 2-10.

19. Go to “Final Actions” on page 2-20.

Function Checks

2

1. Initial Actions have been performed.

   Yes **No**
   ↓ → Go to “Initial Actions” on page 2-6.

2. The lockout switches are in the “ON” (unlocked) position before proceeding with the function checks.

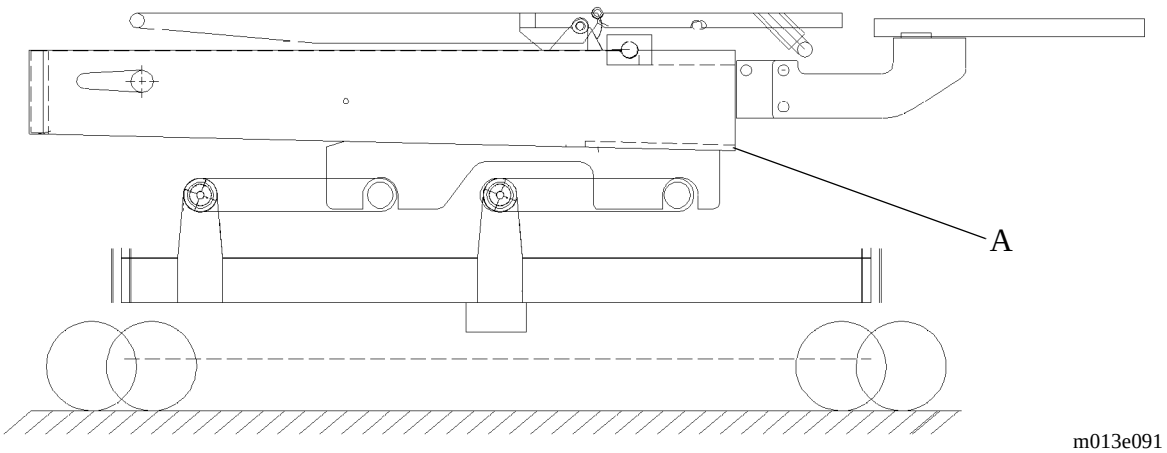
   Yes **No**
   ↓ → Place the lockout switches to the “ON” (unlocked) position and continue to the “Hilow System—Functional Check” on page 2-10.

Hilow System—Functional Check

Perform the following.

1. Place bed functions in the following positions:
   - Position the bed (A) in the mid-height position using the hilow function (if necessary, unplug the bed from its power source, and use the manual crank) (see figure 2-2 on page 2-10).

Figure 2-2. High Bed Position



   - Raise the foot section foot to the high position using the foot function.
   - Lower the head to the low position using the head function.
   - Ensure the bed is out of Trendelenburg (i.e.—sleep surface is level).

2. Momentarily activate the hilow up switch. The bed raises.

Yes **No**
↓ → Go to RAP 2.2.

3. Momentarily activate the hilow down switch. The bed lowers.

   Yes **No**
   ↓ → Go to RAP 2.3.

4. Activate the hilow functions. The hilow motor is free of excessive noise or any mechanical binding/grinding.

   Yes **No**
   ↓ → Go to RAP 2.1.

5. Raise, then lower the sleep surface using the hilow function. The bed sleep surface stops and does not drift downward or coast.

   Yes **No**
   ↓ → Go to RAP 2.1.

6. Raise the bed to the high position using the hilow function. Determine the hilow up limit setting by measuring at the side of the bed, from the floor to the top of the mainframe (see figure 6-4 on page 6-13). The “LBU” measurement is 32.625" ±.187".

   Yes **No**
   ↓ → Adjust the hilow limit switch “LBU” (refer to procedure 4.7). If this solves the problem, go to “Final Actions” on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

7. Lower the bed to the low position using the hilow function. The bed stops at the “LBD1” limit stop. The bed height is 15.50" ±.187".

   Yes **No**
   ↓ → Adjust the hilow limit switch “LBD1” (refer to procedure 4.7). If this solves the problem, go to “Final Actions” on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

8. With the bed still in the full down position, lower the foot until the foot section stops. The hilow raises automatically to the “LBD2” limit stop of 19.875" ±.187".

   Yes **No**
   ↓ → Adjust the hilow limit switch “LBD2” (refer to procedure 4.7). If this solves the problem, go to “Final Actions” on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

2

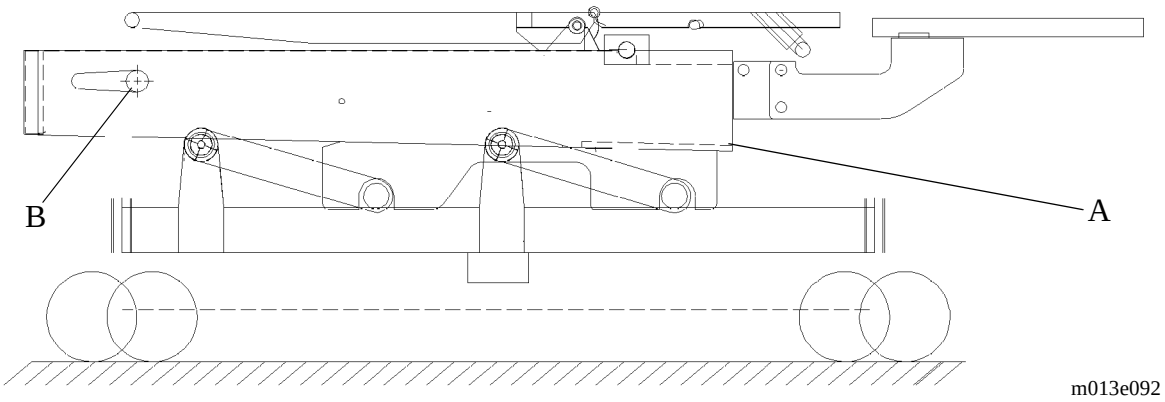
Trendelenburg and Hilow Functional Check

9. Position the bed into a mid height position using the hilow function. Activate the Trendelenburg release lever at the head end of the bed and place the bed in and out of Trendelenburg. The bed goes in and out of Trendelenburg smoothly and the sleep surface is secure when the handle is released:

   Yes **No**
   ↓ → Adjust the Trendelenburg sensing switch (refer to procedure 4.11). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

10. Lower the bed to the low position (A) using the hilow function. Activate the Trendelenburg release lever (B) and place the bed into a full Trendelenburg position (see figure 2-3 on page 2-12). The bed raises to the "TLBD1" limit stop of 18.750" ±.187".

Figure 2-3. Low Bed Position



   Yes **No**
   ↓ → Go to RAP 2.10.

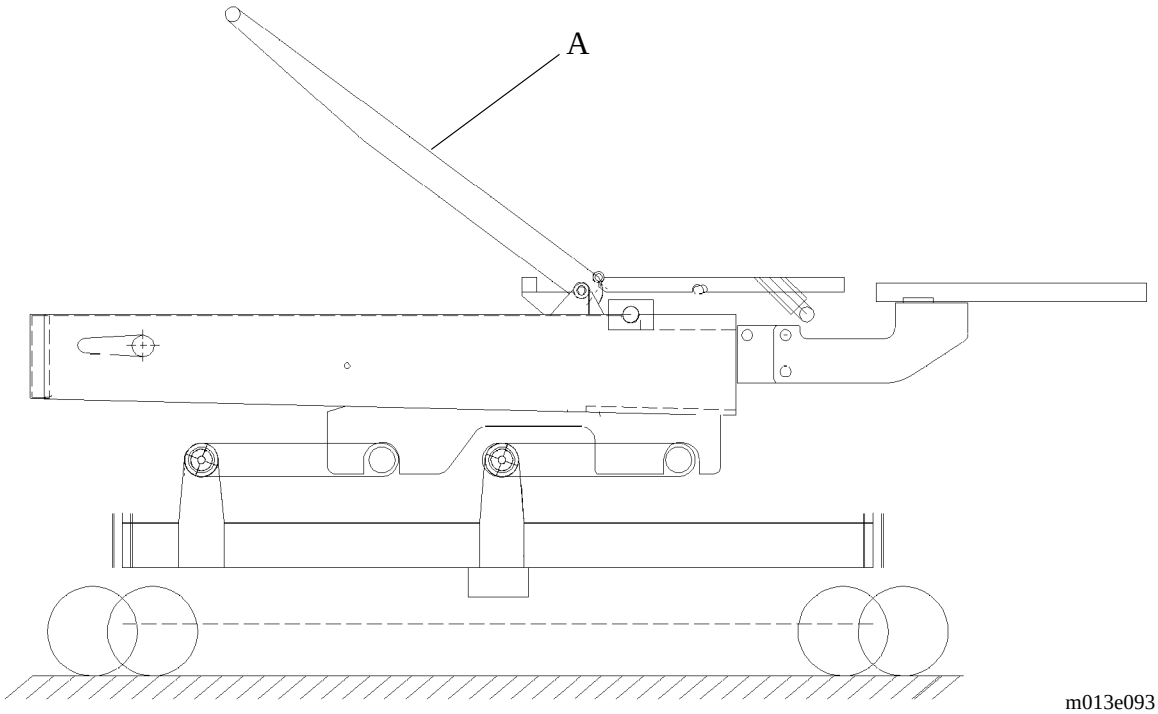
11. With bed still in Trendelenburg, raise the bed to the full high position, and then lower the bed until the bed stops. The bed lowers to the "TLBD2" limit stop of 19.250" ±.187".

   Yes **No**
   ↓ → Go to RAP 2.11.

Head System—Functional Check

1. Place the bed in the following positions:
   - Ensure the sleep surface is level.
   - Place the bed in a mid-height position using the hilow function.
   - Place head section (A) in a mid-height position using the head function (if necessary, unplug the bed from its power source and use the manual crank) (see figure 2-4 on page 2-13).

Figure 2-4. Head Section Position



2. Momentarily activate the head up switch. The head section raises.

   Yes **No**
   ↓ → Go to RAP 2.5.

3. Momentarily activate the head down switch. The head section lowers.

   Yes **No**
   ↓ → Go to RAP 2.6.

4. Activate the head functions. The head motor is free of excessive noise or any mechanical binding/grinding.

Yes **No**
↓ → Go to RAP 2.4.

5. Raise the head section to the high position using the head function. Note the position of the sleep surface. The head section stops and does not drift downward or coast.

   Yes **No**
   ↓ → Go to RAP 2.4.

6. Raise the head section to the high position using the head function. Evenly distribute a maximum of 75 pounds of weight on the sleep surface (simulating a 75 pound patient). Activate the CPR function by pulling the CPR release lever located at the side of the bed. The head section lowers to a flat position within 7 seconds.

   Yes **No**
   ↓ → Adjust the CPR release cables (refer to procedure 4.10). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

7. Raise the head section to the high position using the head function. Ensure the sleep surface is level. The head section inclination (angle) is 65° - 70° (Head Up limit).

   Yes **No**
   ↓ → Adjust the head up limit switch (refer to procedure 4.9). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

8. Lower the head section to the low position using the head function. The head section bumpers just begin to touch the motor cover when the head drive stops (Head Down limit).

   Yes **No**
   ↓ → Adjust the head down limit switch (refer to procedure 4.9). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

Foot System—Functional Check

1. Place bed functions in the following positions:
   - Position the bed in the mid-height position using the hilow function (if necessary, unplug the bed from its power source and use the manual crank).
   - Raise foot section level with the seat section using the foot function.
   - Lower the head section to the low position using the head function.
   - Ensure bed is out of Trendelenburg (i.e.— sleep surface is level).

2. Press the foot up switch, and activate the foot section. The foot section raises when the foot up switch is activated.

   Yes **No**
   ↓ → Go to RAP 2.8.

3. Press the foot down switch, and activate the foot section. The foot section lowers when the foot down switch is activated.

   Yes **No**
   ↓ → Go to RAP 2.9.

4. Raise the foot section to the high position using the foot function. The top of the foot section stops approximately 2.5" above the seat section.

   Yes **No**
   ↓ → Adjust the foot limit switch (refer to procedure 4.8). If this solves the problem, go to “Final Actions” on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

5. Lower the foot section to the low position using the foot function. The foot drive stops when the foot lift arm is .125” (1/8th”) above the foot end hilow lift arm (see figure 4-12 on page 4-33).

   Yes **No**
   ↓ → Adjust the foot limit switch (refer to procedure 4.8). If this solves the problem, go to “Final Actions” on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

NOTE:
Early version beds were equipped with a function called “Foot Pause”. The beds paused for 1 second while activating either the foot down or the foot up command when the foot section is near level with the seat mattress. This is normal operation. Continue pressing the foot down command to place the foot section into the low position.

2

6. Raise the foot section to the high position using the foot function. Lower the bed to the low position using the hilow function. Lower the foot section. The foot section yoke assembly stops momentarily when the foot yoke casting is just above the base frame and the hilow motor raises the bed.

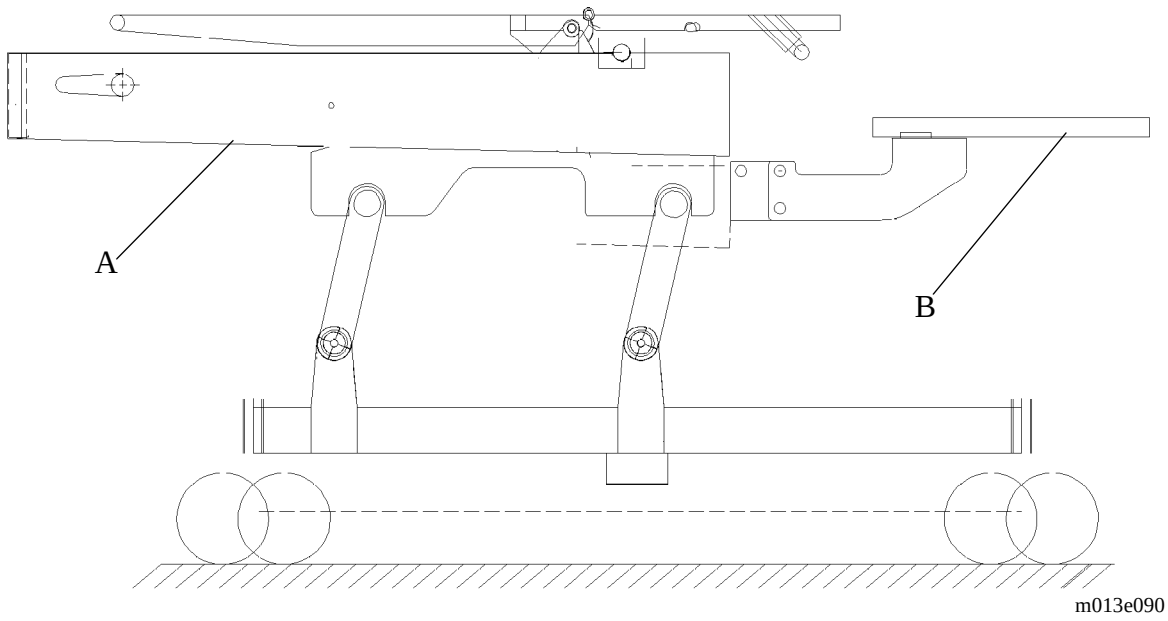
   Yes **No**
   ↓ → Adjust the foot limit switch (refer to procedure 4.8). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

7. Lower the bed to the low position using the hilow function. Lower the foot section using the foot function. The hilow automatically raises from the low position.

   Yes **No**
   ↓ → Go to RAP 2.12.

8. Raise the bed (A) to the high position using the hilow function. Lower the foot section (B) to the low position using the foot function (see figure 2-5 on page 2-16). Lower the bed to the low position using the hilow function. The hilow stops at the intermediate stop (prior to the low hilow position).

Figure 2-5. Foot Section Position



   Yes **No**
   ↓ → Go to RAP 2.13.

9. Activate the foot functions. The foot motor is free of excessive noise or any mechanical binding/grinding.

Yes **No**
↓ → Go to RAP 2.7.

Bed Air System

1. Press the seat firm button, and activate the bed air surface. The seat section mattress inflates.

   Yes **No**
   ↓ → Go to RAP 2.14. (six station manifold) or RAP 2.15 (three station manifold).

2. Press the seat soft button, and activate the bed air surface. The seat section mattress deflates

   Yes **No**
   ↓ → Go to RAP 2.14. (six station manifold) or RAP 2.15 (three station manifold).

3. Press the back firm button, and activate the bed air surface. The lumbar section inflates.

   Yes **No**
   ↓ → Go to RAP 2.14. (six station manifold) or RAP 2.15 (three station manifold).

4. Press the back soft button, and activate the bed air surface. The lumbar section deflates.

   Yes **No**
   ↓ → Go to RAP 2.14. (six station manifold) or RAP 2.15 (three station manifold).

5. Press the auto-inflate button, and activate the bed air surface. The mattress inflates automatically.

   Yes **No**
   ↓ → Go to RAP 2.14. (six station manifold) or RAP 2.15 (three station manifold).

Other Affinity Bed Functions

1. The lockout switches lockout their designated inboard/outboard and night light controls when placed in the “OFF” position (locked), and enable the functions when placed in the “ON” position (unlocked). The lockout functions work properly.

2

Yes **No**
↓ → Replace the faulty rocker switch. If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

2. Place the night light lockout switch in the "ON" position (unlocked). Activate the night light by covering the night light sensor with the palm of your hand. The night light turns on.

   Yes **No**
   ↓ → Replace the night light bulb

3. Operate all radio, TV, nurse call, and lighting functions in both siderails. All functions operate properly.

   Yes **No**
   ↓ → Replace the faulty function (refer to procedure 4.28). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

4. Activate all bed motor switches including those on pendant (if equipped). All functions operate properly.

   Yes **No**
   ↓ → Go to "Siderail Attendant (Outboard) and Patient (Inboard) Switch Assembly" on page 4-80.

5. Perform the brake/steer performance check. Place the brake steer pedal into the brake position and then the steer position. The brake and steer functions operate properly.

   Yes **No**
   ↓ → Adjust the brake and steer functions (refer to procedure 4.31). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

6. Operate the calf supports (if equipped). The calf supports can be secured into place when the release handle (grip) is tightened and released when loosened. Tighten the ball joint by rotating the grip to the right. The calf support tightens in place.

   Yes **No**
   ↓ → Replace the calf support assembly. If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

7. Operate the labor grips on both sides of the bed. The labor grips latch when in the full up position and then release when the release handle is activated.

Yes **No**
↓ → Replace the faulty labor grips (refer to procedure 4.14).

8. Operate the siderail latching mechanism by raising and then lowering the siderail. The siderail latches when in the full up position and lowers slowly when the release handle is activated and allowed to free fall.

Yes **No**
↓ → Replace the faulty siderail assembly ((refer to procedure 4.30).

Final Actions

1. Complete the required preventive maintenance procedures. See “Preventive Maintenance Checklist” on page 6-19.
2. Complete all required administration tasks.

2.1 Hilow Drive Operation Failures

The hilow motor runs, but other problems with the motor are suspected (i.e. noisy motor, drifting, improper lubrication, etc.).

Noisy motor

1. Raise and lower the bed using the hilow function. Visually observe for evidence of physical damage to the drive system (i.e. check for bent motor shaft, loose metal, etc.). The drive system passed inspection.

   Yes ↓ **No** → Replace the hilow motor (refer to procedure 4.1). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 2.

2. Inspect the hilow motor drive mounting bolts. The bolts are tightened properly.

   Yes ↓ **No** → Tighten the hilow motor mounting bolts. If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 3.

3. Raise and lower the bed under a load condition. The hilow drive runs quietly.

   Yes ↓ **No** → Check for a weak capacitor (see "Capacitor Verification (Checking For Weak Capacitor)" on page 6-22). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, Replace the hilow motor (refer to procedure 4.1).

Drifting or coasting

4. Check for the use of silicone lubrication, Teflon lubricant, etc. on the brake washer. The proper type of lubricant is used the on shaft, and the brake washer is free of grease.

   Yes ↓ **No** → Properly lubricate and clean the hilow drive shaft (see "Hilow, Foot, and Head Drive Screw Inspection and Lubrication" on page 6-8). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 5.

5. Inspect and test the capacitor (see "Capacitor Verification (Checking For Weak Capacitor)" on page 6-22). The capacitor passes inspection.

Yes **No**
↓ → Replace the faulty capacitor (refer to procedure 4.17). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 5

This solves the problem.

Yes **No**
↓ → Call Hill-Rom Technical Support at (800) 445-3720.

6. Go to "Final Actions" on page 2-20.

2.2 Hilow Up Malfunction

The hilow motor will not raise the bed when the hilow up switch is activated.

1. Activate the hilow up switch on the opposite siderail. The hilow motor runs.

   Yes **No**
   ↓ → Go to step 4.

2. Activate another bed function switch on the siderail with the non-functioning hilow up switch. The other bed functions work properly.

   Yes **No**
   ↓ → Replace the cable or connectors between the digital board and siderail board (refer to procedure 4.19). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, replace the siderail board (refer to procedure 4.26). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 4.

3. Replace the switch or the flex cable to the siderail circuit board (refer to procedure 4.26). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 4.

4. Activate the other bed functions on the inner panel with the non-functioning hilow up switch. The other bed functions work properly.

   Yes **No**
   ↓ → Go to step 6.

5. Go to step 8.

6. At the digital board connector P10, jumper P1 (white) to both pin 4 (gray) and pin 5 (blue) and test the non-functioning switches. The bed functions work.

   Yes **No**
   ↓ → Go to step 8.

7. Replace the lockout switch or the cable to the lockout switch. If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

NOTE:
For high voltage checks, do not unplug the connectors.

2

8. Set your VOM to measure V AC. At the high voltage P.C. board connector P17, place your black probe into pin 11 (tan) and your red probe into pin 1 (brown). Press the hilow up switch. The voltage is approximately 115V AC or 230V AC.

NOTE:
120V AC if domestic, 230V AC if European.

Yes **No**
↓ → Go to step 11.

9. Manually crank the bed hilow to its middle position. Raise the head section to 45 degrees. At the motor connector beneath the bed, connect the hilow motor to the head cable connector. Press the head up switch. The hilow motor raises the bed.

CAUTION:
Limit switches are not functioning during this test.

Yes **No**
↓ → Replace the hilow motor or the cable to the hilow motor (refer to procedure 4.1). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

10. Replace the connectors or cable from the motor connector to the P17 connector in the high voltage box (refer to procedure 4.18). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

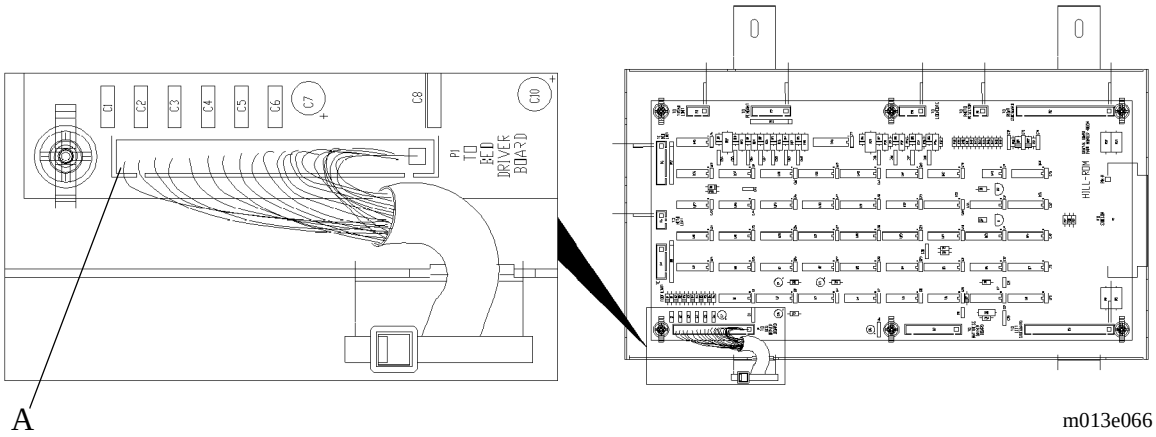
11. Set the hilow at mid-height. Probe the digital board connector P6, jumper pin3 (white) to pin 6 (brown). Activate the hilow up switch. The hilow runs up.

Yes **No**
↓ → Go to step 13.

12. Replace the hilow limit switch assembly (A) or the wiring to the hilow limit switch (refer to procedure 4.7). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 13.

13. Set your VOM to measure V DC. At the digital board connector P1 (A), probe pin 9 (black) and pin 2 (brown), pin 7 (yellow) and pin 9 (black) (see figure 2-6 on page 2-25). Press the hilow up switch. The voltages are approximately 5V DC.

Figure 2-6. P1 Connector location



Yes **No**
↓ → Replace the digital board (refer to procedure 4.19). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

14. Replace the high voltage board or the wiring to the high voltage board (refer to procedure 4.18).

    This solves the problem.

    Yes **No**
    ↓ → Call Hill-Rom Technical Support at (800) 445-3720.

15. Go to "Final Actions" on page 2-20.

2.3 Hilow Down Malfunction

The hilow motor will not lower the bed when the hilow down switch is activated.

1. Activate the hilow down switch on the opposite siderail. The hilow motor runs.

   Yes **No**
   ↓ → Go to step 4.

2. Activate another bed function switch on the siderail with the non-functioning hilow up switch. The other bed functions work properly.

   Yes **No**
   ↓ → Replace the cable or connectors between the digital board and siderail board (refer to procedure 4.19). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, replace the siderail board (refer to procedure 4.26). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 4.

3. Replace the switch or the flex cable to the siderail circuit board (refer to procedure 4.26). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 4.

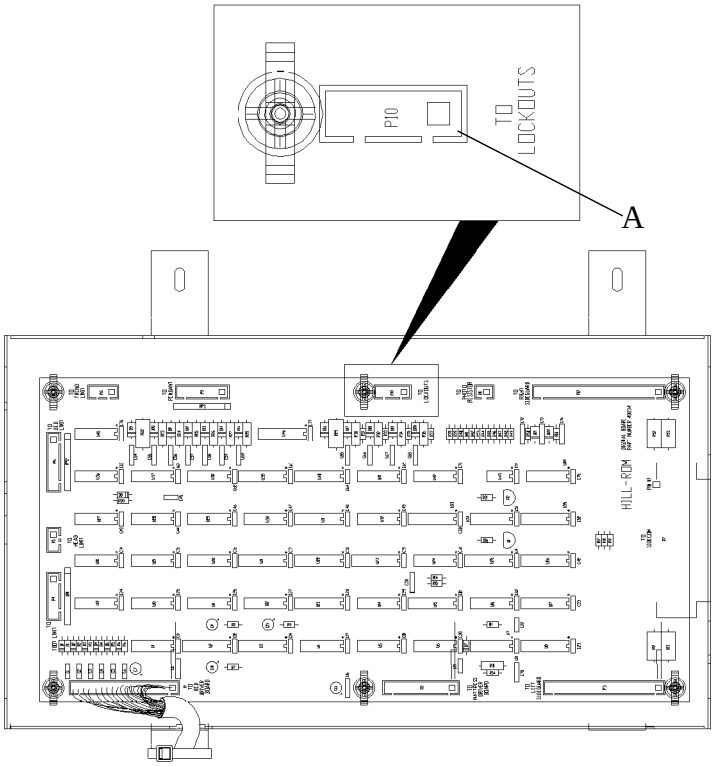
4. Activate the other bed functions on the inner panel with the non-functioning hilow up switch. The other bed functions work properly.

   Yes **No**
   ↓ → Go to step 6.

5. Go to step 8.

6. At the digital board connector P10 (A), jumper P1 (white) to both pin 4 (gray) and pin 5 (blue) and test the non-functioning switches (see figure 2-7 on page 2-27). The bed functions work.

Figure 2-7. P10 Connector Location



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Yes **No**
↓ → Go to step 8.

7. Replace the lockout switch or the cable to the lockout switch. If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

NOTE:
For high voltage checks, do not unplug the connectors.

8. Set your VOM to measure V AC. At the high voltage P.C. board connector P17, place your black probe into pin 11 (tan) and your red probe into pin 4 (red). Press the hilow down switch. The voltage is approximately 120V AC.

NOTE:
120V AC if domestic, 230V AC if European.

Yes **No**
↓ → Go to step 11.

9. Manually crank the bed hilow to its middle position. Raise the head section to 45 degrees. At the motor connector beneath the bed, connect the hilow

motor to the head cable connector. Press the head down switch. The hilow motor lowers the bed.

2

CAUTION:
Limit switches are not functioning during this test.

Yes **No**
↓ → Replace the hilow motor or the cable to the hilow motor (refer to procedure 4.1). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

10. Replace the connectors or cable from the motor connector to the P17 connector in the high voltage box (refer to procedure 4.18). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

11. Raise the hilow to its highest point. Probe the digital board connector P6, jumper pin3 (white) to pin 4 (red). Activate the hilow down switch. The hilow runs down.

    Yes **No**
    ↓ → Go to step 13.

12. Replace the hilow limit switch or the wiring to the hilow limit switch (refer to procedure 4.7). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 13.

13. Set your VOM to measure V DC. At the digital board connector P1, probe pin 9 (black) and pin 1 (red), pin 7 (yellow/orange) and pin 9 (black). Press the hilow down switch. The voltages are approximately 5V DC.

    Yes **No**
    ↓ → Replace the digital board (refer to procedure 4.19). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

14. Replace the high voltage board or the wiring to the high voltage board (refer to procedure 4.18).

    This solves the problem.

    Yes **No**
    ↓ → Call Hill-Rom Technical Support at (800) 445-3720.

15. Go to "Final Actions" on page 2-20.

2.4 Head Drive Operation Failures

The head motor runs, but other problems with the motor are suspected (i.e. noisy motor, drifting, improper lubrication, etc.).

Noisy motor

1. Raise and lower the head section using the head function. Visually observe for evidence of physical damage to the drive system (i.e. check for bent motor shaft, loose metal, etc.). The drive system passed inspection.

   Yes ↓ **No** → Replace the head motor (refer to procedure 4.3). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 2.

2. Inspect the head motor drive mounting bolts. The bolts are tightened properly.

   Yes ↓ **No** → Tighten the head motor mounting bolts. If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 3.

3. Raise and lower the head section under a load condition. The head drive runs quietly.

   Yes ↓ **No** → Check for a weak capacitor (see "Capacitor Verification (Checking For Weak Capacitor)" on page 6-22). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, Replace the hilow motor (refer to procedure 4.1).

Drifting or Coasting

4. Check for the use of silicone lubrication, Teflon lubricant, etc. on the brake washer. The proper type of lubricant is used the on shaft, and the brake washer is free of grease.

   Yes ↓ **No** → Properly lubricate and clean the head drive shaft (see "Hilow, Foot, and Head Drive Screw Inspection and Lubrication" on page 6-8). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 5.

5. Inspect and test the capacitor (see "Capacitor Verification (Checking For Weak Capacitor)" on page 6-22). The capacitor passes inspection.

Yes **No**
↓ → Replace the faulty capacitor (refer to procedure 4.17). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 5

This solves the problem.

Yes **No**
↓ → Call Hill-Rom Technical Support at (800) 445-3720.

6. Go to "Final Actions" on page 2-20.

2.5 Head Up Malfunction

The head motor fails to raise the head section when the head up switch is activated.

1. Activate the head up switch on the opposite siderail of the non-functioning switch. The head motor works properly.

   Yes **No**
   ↓ → Go to step 4.

2. Activate another bed function switch on the siderail with the non-functioning head up switch. The other bed functions work properly.

   Yes **No**
   ↓ → Replace the cable or connectors between the digital board and siderail board (refer to procedure 4.19). If this solves the problem, go to “Final Actions” on page 2-20. Otherwise, replace the siderail board (refer to procedure 4.26). If this solves the problem, go to “Final Actions” on page 2-20. Otherwise, continue to step 4.

3. Replace the switch or the flex cable to the siderail circuit board (refer to procedure 4.26). If this solves the problem, go to “Final Actions” on page 2-20. Otherwise, continue to step 4.

4. Activate the inside/outside head up switches opposite of non-functioning switch on both of the siderails. The head motor works properly.

   Yes **No**
   ↓ → Go to step 10.

5. Activate the other bed function switches on the inner or outer siderail panel with the non-functioning switches. The bed functions work properly.

   Yes **No**
   ↓ → Go to step 7.

6. Go to step 9.

7. At the digital board (A) connector P10, jumper P1 (white) to both pin 4 (gray) and pin 5 (blue) and test the non-functioning switches. The bed functions work properly.

   Yes **No**
   ↓ → Go to step 8.

2

8. Replace the lockout switch or the cable to the lockout switch. If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

9. Replace the digital board (refer to procedure 4.19). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

NOTE:
For high voltage checks, do not unplug the connectors.

10. Set your VOM to measure V AC. At the high voltage P.C. board connector P17, place your black probe into pin 12 (grey) and your red probe into pin 6 (orange). Press the head up switch. The voltage is approximately 115V AC or 230V AC.

NOTE:
120V AC if domestic, 230V AC if European.

Yes **No**
↓ → Go to step 13.

11. Using the CPR release handle, lower the head section to a 45 degree angle. Position the foot section to its flat position. At the motor connector beneath the bed, connect the head motor to the foot cable connector. Press the foot down switch on the siderail. The head motor raises the head section.

CAUTION:
Limit switches are not functioning during this test.

Yes **No**
↓ → Replace the head motor or the cable to the head motor (refer to procedure 4.3). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

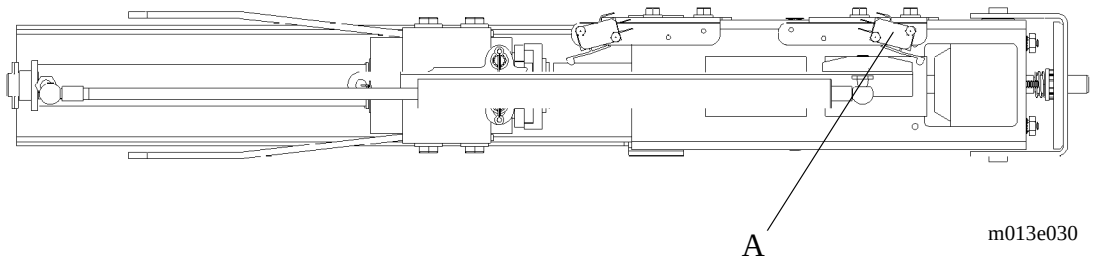
12. Replace the connectors or cable from the motor connector to the P17 connector in the high voltage box (refer to procedure 4.18). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

13. Probe the digital board connector P5, jumper pin 1 (white) to pin 2 (orange). Activate the head up switch. The head motor works properly.

Yes **No**
↓ → Go to step 15.

14. Replace the head up limit switch (A) or the wiring to the head limit switch (refer to procedure 4.9) (see figure 2-8 on page 2-33). If this solves the problem, go to “Final Actions” on page 2-20. Otherwise, continue to step 15.

Figure 2-8. Head Up Limit Switch Location



15. Set your VOM to measure V DC. At the digital board connector P1, probe pin 6 (orange) and pin 9 (black), pin 7 (yellow/orange) and pin 9 (black). Press the head up switch. The voltages are approximately 5V DC.

    Yes **No**
    ↓ → Replace the digital board (refer to procedure 4.19). If this solves the problem, go to “Final Actions” on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

16. Replace the high voltage board or the wiring to the high voltage board (refer to procedure 4.18).

    This solves the problem.

    Yes **No**
    ↓ → Call Hill-Rom Technical Support at (800) 445-3720.

17. Go to “Final Actions” on page 2-20.

2.6 Head Down Malfunction

The head motor fails to lower the head section when the head down switch is activated.

1. Activate the head down switch on the opposite siderail of the non-functioning switch. The head motor works properly.

   Yes **No**
   ↓ → Go to step 4.

2. Activate another bed function switch on the siderail with the non-functioning head down switch. The other bed functions work properly.

   Yes **No**
   ↓ → Replace the cable or connectors between the digital board and siderail board (refer to procedure 4.19). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, replace the siderail board (refer to procedure 4.26). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 4.

3. Replace the switch or the flex cable to the siderail circuit board (refer to procedure 4.26). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 4.

4. Activate the inside/outside head down switches opposite of non-functioning switch on both of the siderails. The head motor works properly.

   Yes **No**
   ↓ → Go to step 10.

5. Activate the other bed function switches on the inner or outer siderail panel with the non-functioning switches. The bed functions work properly.

   Yes **No**
   ↓ → Go to step 7.

6. Go to step 9.

7. At the digital board (A) connector P10, jumper P1 (white) to both pin 4 (gray) and pin 5 (blue) and test the non-functioning switches. The bed functions work properly.

   Yes **No**
   ↓ → Go to step 8.

8. Replace the lockout switch (A) or the cable to the lockout switch. If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

9. Replace the digital board (refer to procedure 4.19). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

NOTE:
For high voltage checks, do not unplug the connectors.

10. Set your VOM to measure V AC. At the high voltage P.C. board connector P17, place your black probe into pin 3 (yellow) and your red probe into pin 12 (grey). Press the head down switch. The voltage is approximately 115V AC or 230V AC.

NOTE:
120V AC if domestic, 230V AC if European.

Yes **No**
↓ → Go to step 13.

11. Using the CPR release handle, lower the head section to a 45 degree angle. Position the foot section to its flat position. At the motor connector beneath the bed, connect the head motor to the foot cable connector. Press the foot up switch on the siderail. The head motor lowers the head section.

CAUTION:
Limit switches are not functioning during this test.

Yes **No**
↓ → Replace the head motor or the cable to the head motor (refer to procedure 4.3). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

12. Replace the connectors or cable from the motor connector to the P17 connector in the high voltage box (refer to procedure 4.18). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

13. Probe the digital board connector P5 (A), jumper pin 1 (white) to pin 3 (yellow) (see figure 2-9 on page 2-36). Activate the head down switch. The head motor works properly.

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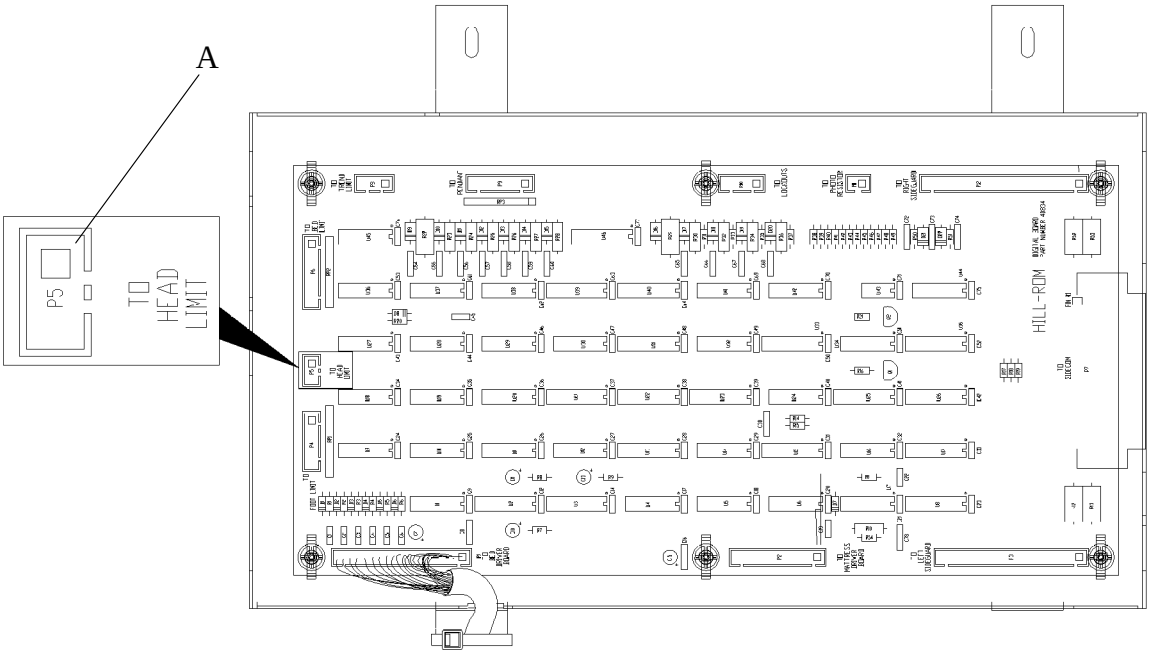
Figure 2-9. P5 Connector Location



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Yes **No**
↓ → Go to step 15.

14. Replace the head limit switch (A) or the wiring to the head limit switch (refer to procedure 4.9). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 15.

15. Set your VOM to measure V DC. At the digital board connector P1, probe pin 5 (yellow/white) and pin 9 (black), pin 7 (yellow/orange) and pin 9 (black). Press the head down switch. The voltages are approximately 5V DC.

    Yes **No**
    ↓ → Replace the digital board (refer to procedure 4.19). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

16. Replace the high voltage board or the wiring to the high voltage board (refer to procedure 4.18).

    This solves the problem.

    Yes **No**
    ↓ → Call Hill-Rom Technical Support at (800) 445-3720.

17. Go to "Final Actions" on page 2-20.

2.7 Foot Drive Operation Failures

The foot motor runs, but other problems with the motor are suspected (i.e. noisy motor, drifting, improper lubrication, etc.).

Noisy motor

1. Raise and lower the foot section using the foot function. Visually observe for evidence of physical damage to the drive system (i.e. check for bent motor shaft, loose metal, etc.). The drive system passed inspection.

   Yes **No**
   ↓ → Replace the foot motor (refer to procedure 4.3). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 2.

2. Inspect the foot motor drive mounting bolts. The bolts are tightened properly.

   Yes **No**
   ↓ → Tighten the foot motor mounting bolts. If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 3.

3. Raise and lower the foot section under a load condition. The foot drive runs quietly.

   Yes **No**
   ↓ → Check for a weak capacitor (see "Capacitor Verification (Checking For Weak Capacitor)" on page 6-22). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, Replace the hilow motor (refer to procedure 4.1).

Drifting or Coasting

4. Check for the use of silicone lubrication, Teflon lubricant, etc. on the brake washer. The proper type of lubricant is used the on shaft, and the brake washer is free of grease.

   Yes **No**
   ↓ → Properly lubricate and clean the foot drive shaft (see "Hilow, Foot, and Head Drive Screw Inspection and Lubrication" on page 6-8). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 5.

5. Inspect and test the capacitor (see "Capacitor Verification (Checking For Weak Capacitor)" on page 6-22). The capacitor passes inspection.

Yes **No**
↓ → Replace the faulty capacitor (refer to procedure 4.17). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 5

This solves the problem.

Yes **No**
↓ → Call Hill-Rom Technical Support at (800) 445-3720.

6. Go to "Final Actions" on page 2-20.

2.8 Foot Up Malfunction

The foot motor fails to raise the foot section when the foot up switch is activated.

1. Activate the foot up switch on the opposite siderail. The foot motor runs.

   Yes **No**
   ↓ → Go to step 4.

2. Activate another bed function switch on the siderail with the non-functioning hilow up switch. The other bed functions work properly.

   Yes **No**
   ↓ → Replace the cable or connectors between the digital board and siderail board (refer to procedure 4.19). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, replace the siderail board (refer to procedure 4.26). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 4.

3. Replace the switch or the flex cable to the siderail circuit board (refer to procedure 4.26). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 4.

4. Activate the inside/outside foot down switches opposite of non-functioning switch on both of the siderails. The foot motor works properly.

   Yes **No**
   ↓ → Go to step 10.

5. Activate the other bed function switches on the inner or outer siderail panel with the non-functioning switches. The bed functions work properly.

   Yes **No**
   ↓ → Go to step 7.

6. Go to step 9.

7. At the digital board (A) connector P10, jumper P1 (white) to both pin 4 (gray) and pin 5 (blue) and test the non-functioning switches. The bed functions work properly

   Yes **No**
   ↓ → Go to step 8.

8. Replace the lockout switch or the cable to the lockout switch. If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

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9. Replace the digital board (refer to procedure 4.19). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

NOTE:
For high voltage checks, do not unplug the connectors.

10. Set your VOM to measure V AC. At the high voltage P.C. board connector P17, place your black probe into pin 10 (white) and your red probe into P2 (blue). Press the foot up switch. The voltage is approximately 115V AC or 230V AC.

NOTE:
120V AC if domestic, 230V AC if European.

Yes **No**
↓ → Go to step 13.

11. Manually crank the foot section to its flat position. Raise the head section to 45 degrees. At the motor connector beneath the bed, connect the foot motor to the head cable connector. Press the head down switch. The foot motor raises the foot section.

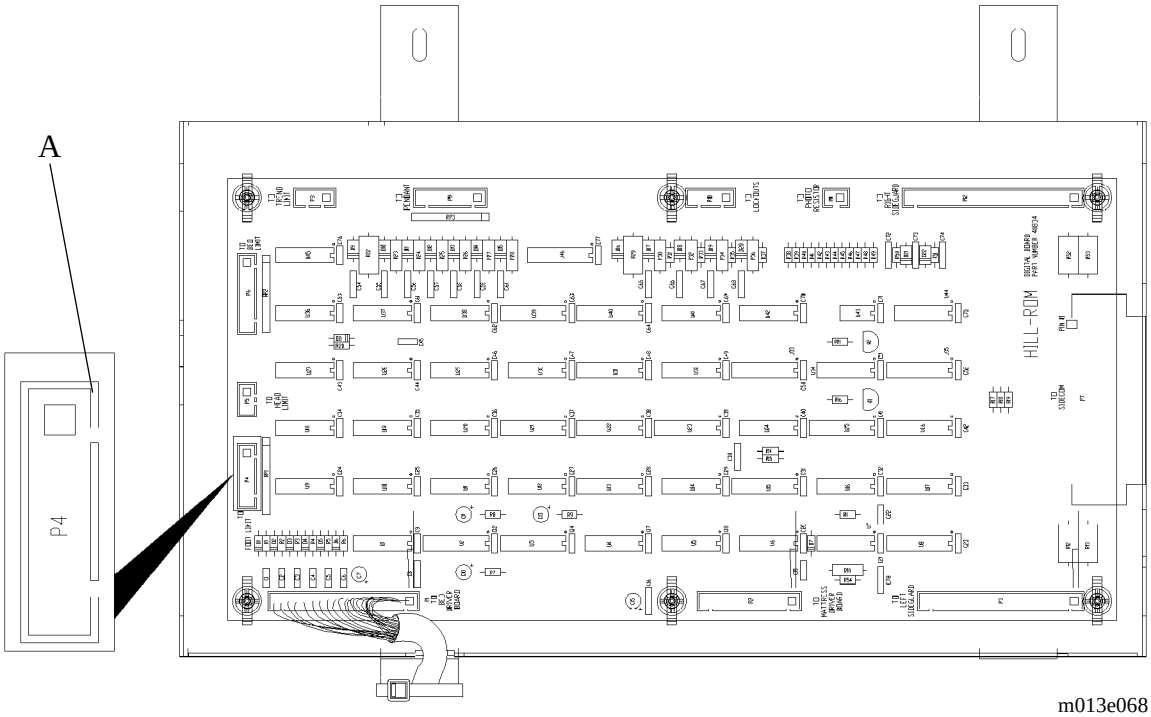
CAUTION:
Limit switches are not functioning during this test.

Yes **No**
↓ → Replace the foot motor or the cable to the foot motor (refer to procedure 4.5). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

12. Replace the connectors or cable from the motor connector to the P17 connector in the high voltage box (refer to procedure 4.18). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

13. Activate the foot up/down switch and ensure that the foot section is level with the sleep surface. Probe the digital board connector P4 (A), jumper pin 1 (white) to pin 6 (blue) (see figure 2-10 on page 2-41). Activate the foot up switch. The foot motor works properly.

Figure 2-10. P4 Connector Location



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Yes **No**
↓ → Go to step 15.

14. Replace the foot limit switch or the wiring to the foot limit switch (refer to procedure 4.8). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 15.

15. Set your VOM to measure V DC. At the digital board connector P1, probe pin 9 (black) and pin 3 (blue), pin 7 (yellow/orange) and pin 9 (black). Press the foot up switch. The voltages are approximately 5V DC.

    Yes **No**
    ↓ → Replace the digital board (refer to procedure 4.19). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

16. Replace the high voltage board or the wiring to the high voltage board (refer to procedure 4.18).

    This solves the problem.

    Yes **No**
    ↓ → Call Hill-Rom Technical Support at (800) 445-3720.

17. Go to "Final Actions" on page 2-20.

2.9 Foot Down Malfunction

The foot motor fails to lower the foot section when the foot down switch is activated.

1. Activate the foot down switch on the opposite siderail. The foot motor runs.

   Yes **No**
   ↓ → Go to step 4.

2. Activate another bed function switch on the siderail with the non-functioning hilow up switch. The other bed functions work properly.

   Yes **No**
   ↓ → Replace the cable or connectors between the digital board and siderail board (refer to procedure 4.19). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, replace the siderail board (refer to procedure 4.26). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 4.

3. Replace the switch or the flex cable to the siderail circuit board (refer to procedure 4.26). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 4.

4. Activate the inside/outside foot down switches opposite of non-functioning switch on both of the siderails. The foot motor works properly.

   Yes **No**
   ↓ → Go to step 10.

5. Activate the other bed function switches on the inner or outer siderail panel with the non-functioning switches. The bed functions work properly.

   Yes **No**
   ↓ → Go to step 7.

6. Go to step 9.

7. At the digital board connector P10, jumper P1 (white) to both pin 4 (gray) and pin 5 (blue) and test the non-functioning switches. The bed functions work.

   Yes **No**
   ↓ → Go to step 9.

8. Replace the lockout switch or the cable to the lockout switch. If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

9. Replace the digital board (refer to procedure 4.19). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

NOTE:
For high voltage checks, do not unplug the connectors.

10. Set your VOM to measure V AC. At the high voltage P.C. board connector P17, place your black probe into pin 10 (white) and your red probe into P2 (blue). Press the foot down switch. The voltage is approximately 115V AC or 230V AC.

NOTE:
120V AC if domestic, 230V AC if European.

Yes **No**
↓ → Go to step 13.

11. Manually crank the foot section to its flat position. Raise the head section to 45 degrees. At the motor connector beneath the bed, connect the foot motor to the head cable connector. Press the head up switch. The foot motor lowers the foot section.

CAUTION:
Limit switches are not functioning during this test.

Yes **No**
↓ → Replace the foot motor or the cable to the foot motor (refer to procedure 4.5). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

12. Replace the connectors or cable from the motor connector to the P17 connector in the high voltage box (refer to procedure 4.18). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

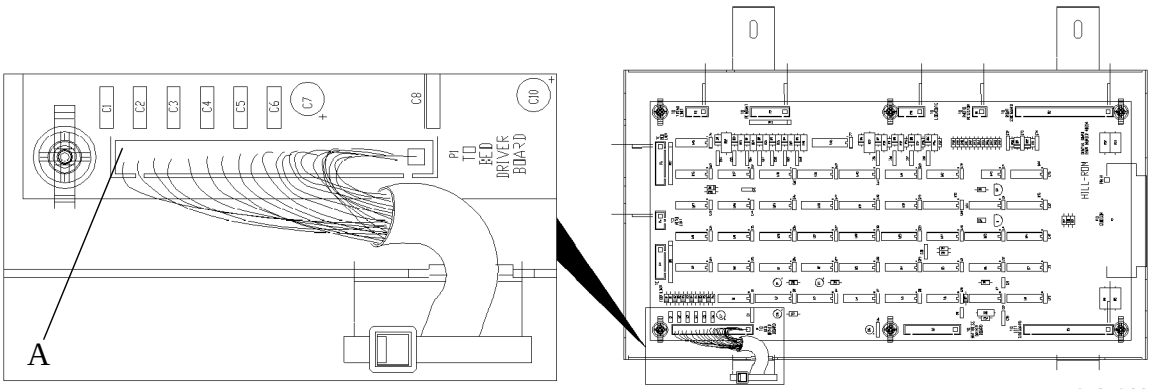
13. Activate the foot up/down switch and ensure that the foot section is level with the sleep surface. Probe the digital board connector P4, jumper pin 1 (white) to pin 6 (blue). Activate the foot down switch. The foot motor works properly.

Yes **No**
↓ → Go to step 15.

14. Replace the foot limit switch or the wiring to the foot limit switch (refer to procedure 4.8). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 15.

15. Set your VOM to measure V DC. At the digital board connector P1 (A), probe pin 9 (black) and pin 3 (blue), pin 7 (yellow/orange) and pin 9 (black) (see figure 2-11 on page 2-44). Press the foot down switch. The voltages are approximately 5V DC.

Figure 2-11. P1 Connector location



m013e066

Yes **No**
↓ → Replace the digital board (refer to procedure 4.19). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

16. Replace the high voltage board or the wiring to the high voltage board (refer to procedure 4.18).

    This solves the problem.

Yes **No**
↓ → Call Hill-Rom Technical Support at (800) 445-3720.

17. Go to "Final Actions" on page 2-20.

2.10 Hilow Up Malfunction (When The Trendelenburg Is Activated)

The hilow does not raise automatically when the trendelenburg is activated from the low position.

1. The hilow functions on the siderails and pendant control work properly.

   Yes **No**
   ↓ → Go to “Hilow Up Malfunction” on page 2-23. If this solves the problem, go to “Final Actions” on page 2-20. Otherwise, continue to step 2.

2. Activate the Trendelenburg function by activating the Trendelenburg handle. The Trendelenburg mechanism engages.

   Yes **No**
   ↓ → Repair the mechanism (refer to procedure 4.11). If this solves the problem, go to “Final Actions” on page 2-20. Otherwise, continue to step 3.

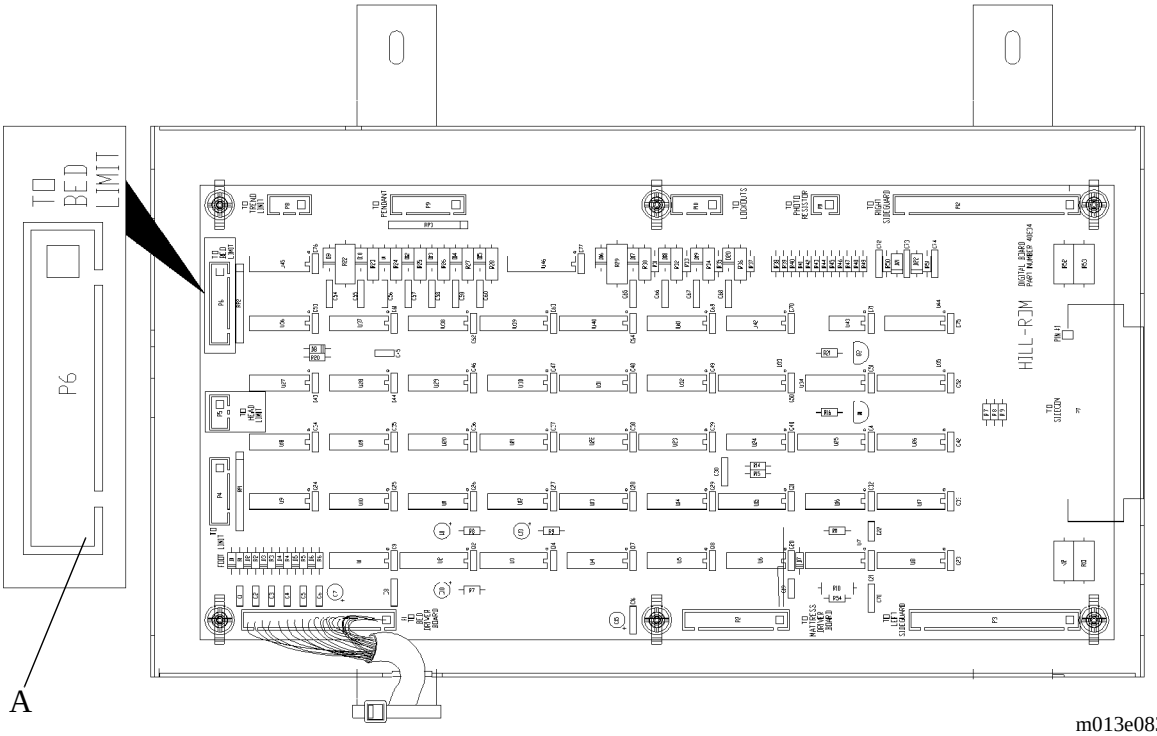
3. Set you VOM to check ohms/resistance. At the digital board connector J8, place one probe into pin 3 (tan) and the other probe into pin 4 (white). The switch closes.

   Yes **No**
   ↓ → Replace the Trendelenburg handle switch or the wiring to the Trendelenburg handle switch (refer to procedure 4.11). If this solves the problem, go to “Final Actions” on page 2-20. Otherwise, continue to step 4.

4. Set your VOM to measure V DC. At the digital board connector P6 (A), place your black probe into pin 1 (grey) and your red probe into pin 7 (yellow) (see figure 2-12 on page 2-46). Activate the Trendelenburg handle switch. The voltage is approximately 5V DC.

2

Figure 2-12. P6 Connector Location



m013e083

Yes **No**
↓ → Replace the hilow limit switch or wiring to the hilow limit switch (refer to procedure 4.7). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 5.

5. Replace the digital board (refer to procedure 4.19).

   This solves the problem.

   Yes **No**
   ↓ → Call Hill-Rom Technical Support at (800) 445-3720.

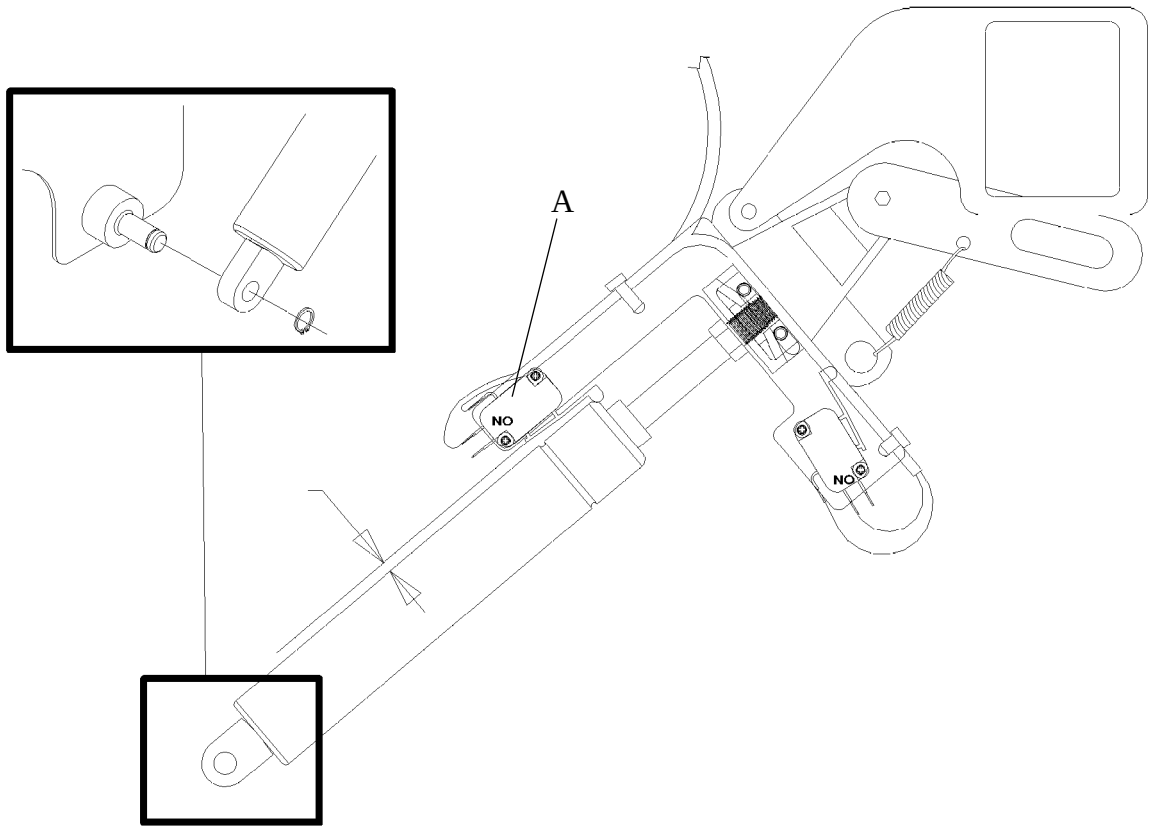
6. Go to "Final Actions" on page 2-20.

2.11 Hilow Malfunction (Intermediate Stop)

The hilow does not stop at the intermediate stop (prior to the low position) when the bed is in the Trendelenburg position.

1. Activate the Trendelenburg function. The Trendelenburg gas cylinder switch (A) engages properly (see figure 2-13 on page 2-47).

Figure 2-13. Trendelenburg Gas Cylinder Switch Location



m013e043

Yes ↓ **No** → Replace the Trendelenburg gas cylinder switch (refer to procedure 4.11). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 2.

2. Set you VOM to check ohms/resistance. At the digital board connector J8, place one probe into pin 1 (white) and the other probe into pin 2 (pink). The switch closes.

2

Yes **No**
↓ → Replace the switch at the gas spring or the wiring to the switch (refer to procedure 4.11). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 3.

3. Set your VOM to measure V DC. At the digital board connector P6, place your black probe into pin 1 (grey) and your red probe into pin 8 (green). Activate the Trendelenburg gas cylinder switch. The voltage is approximately 5V DC.

   Yes **No**
   ↓ → Replace the hilow limit switch or wiring to the hilow limit switch (refer to procedure 4.7). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 4.

4. Replace the digital board (refer to procedure 4.19).

   This solves the problem.

   Yes **No**
   ↓ → Call Hill-Rom Technical Support at (800) 445-3720.

5. Go to "Final Actions" on page 2-20.

2.12 Hilow Up Malfunction (When The Foot Section Is Lowered)

The hilow fails to automatically raise from the low position when the foot section is lowered to its lowest point.

1. Activate the hilow function from the siderails and pendant control. The hilow function works properly.

   Yes **No**
   ↓ → Go to “Hilow Up Malfunction” on page 2-23. or “Hilow Down Malfunction” on page 2-26. If this solves the problem, go to “Final Actions” on page 2-20. Otherwise, continue to step 2.

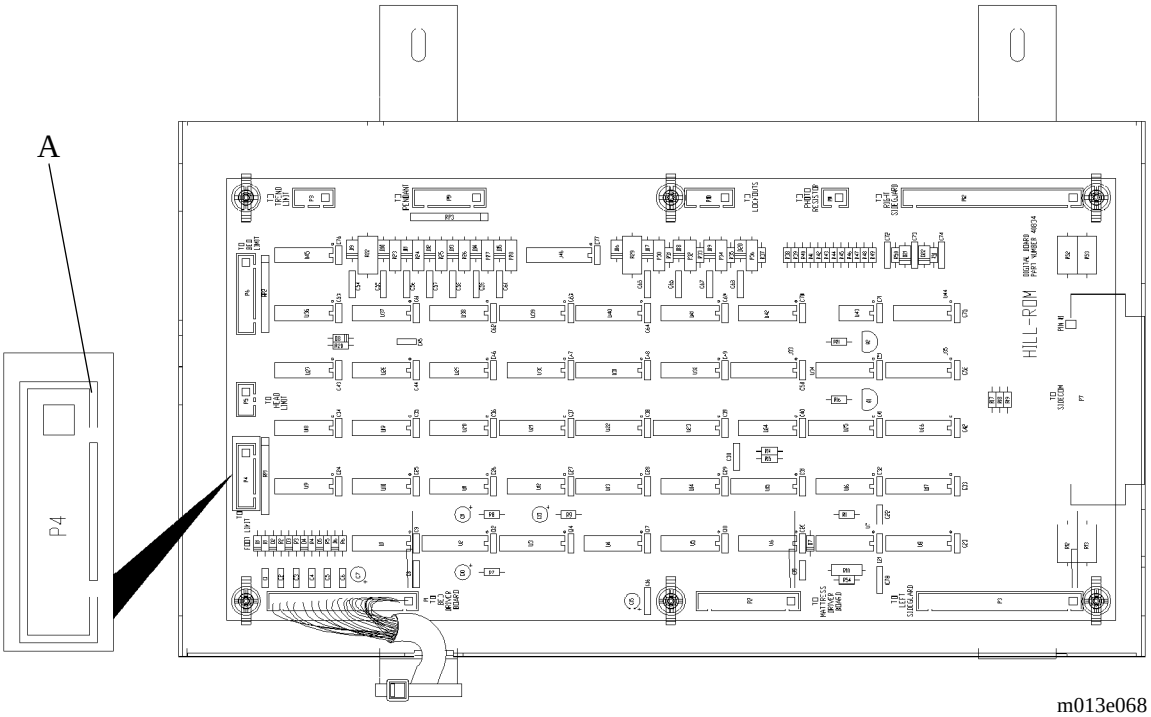
2. Put the bed hilow into the low position. Set your VOM to measure V DC. At the digital board connector P6, place your black probe into pin 1 (grey) and your red probe into pin 9 (blue). Activate the foot up switch. The voltage is 0V DC.

   Yes **No**
   ↓ → Replace the hilow limit switch or the wiring to the hilow limit switch (refer to procedure 4.7). If this solves the problem, go to “Final Actions” on page 2-20. Otherwise, continue to step 3.

3. Put the bed hilow in the high position and the foot section in the low position. Set your VOM to measure V DC. At the digital board connector P4 (A), place your black probe into pin 5 (yellow) and your red probe into pin 7 (grey) (see figure 2-14 on page 2-50). Activate the foot down switch. The voltage is 0V DC.

2

Figure 2-14. P4 Connector Location



m013e068

Yes **No**

↓ → Replace the foot limit switch or the wiring to the foot limit switch (refer to procedure 4.8). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 4.

4. Replace the digital board (refer to procedure 4.19).

   This solves the problem.

   Yes **No**

   ↓ → Call Hill-Rom Technical Support at (800) 445-3720.

5. Go to "Final Actions" on page 2-20.

2.13 Hilow Down Malfunction (Intermediate Stop)

The hilow down fails to stop at the intermediate stop (prior to the low hilow position) when the foot section is down.

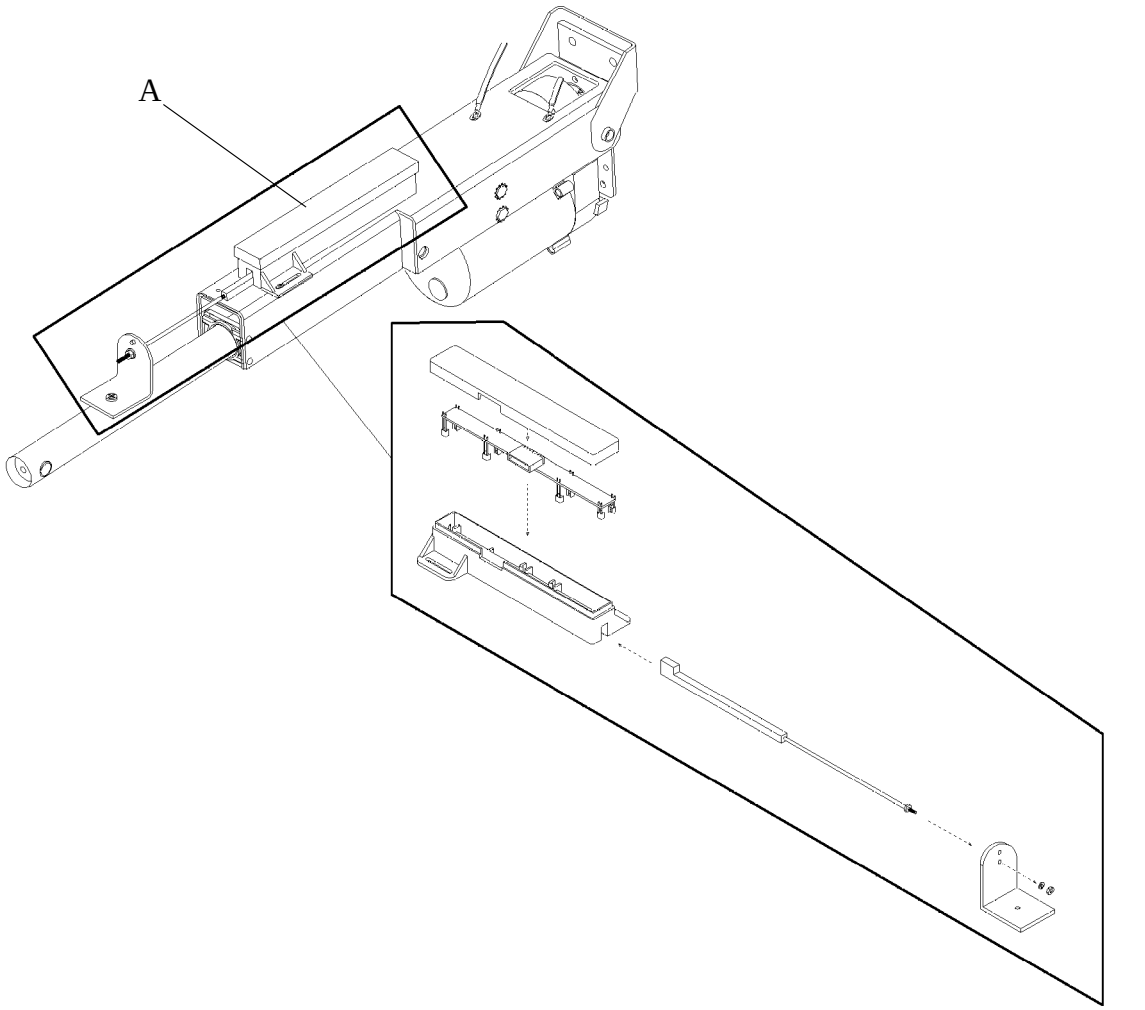
1. Put the bed hilow in the low position and the foot section in the high position. Set your VOM to measure V DC. At the digital board connector P6, place your black probe into pin 1 (grey) and your red probe into pin 9 (blue). Activate the hilow down switch. The voltage is 0V DC.

   Yes **No**
   ↓ → Replace the hilow limit switch or the wiring to the hilow limit switch (refer to procedure 4.7). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 2.

2. Put the bed hilow in the high position and the foot section in the low position. Set your VOM to measure V DC. At the digital board connector P4, place your black probe into pin 5 (yellow) and your red probe into pin 7 (grey). Activate the foot down switch. The voltage is 0V DC.

   Yes **No**
   ↓ → Replace the foot limit switch assembly (A) or the wiring to the foot limit switch (refer to procedure 4.8) (see figure 2-15 on page 2-52). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 3.

Figure 2-15. Foot Limit Switch Assembly Location



m013e031

3. Replace the digital board (refer to procedure 4.19).

   This solves the problem.

   Yes **No**
   ↓ → Call Hill-Rom Technical Support at (800) 445-3720.

4. Go to "Final Actions" on page 2-20.

2.14 Bed Air Surface Malfunction (Six Station)

The bed air surface does not function properly.

1. Activate all bed air surface switches in both siderails. Only one switch does not work.

   Yes **No**
   ↓ → Go to step 3.

2. Replace the defective switch (refer to procedure 4.26). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 3.

3. All of the switches in one siderail work while several of the switches in the opposite siderail fail.

   Yes **No**
   ↓ → Go to step 5.

4. Replace the siderail circuit board (refer to procedure 4.26). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 5.

5. Activate the bed air function switch. Audible clicks of the relay from the air circuit board can be heard.

   Yes **No**
   ↓ → Go to step 7.

6. Go to step 9.

7. Set your VOM to measure V DC. At the digital board connector P2, probe item 1 (see table 2-3 on page 2-64). The pin voltages are correct.

   Yes **No**
   ↓ → Replace the digital board (refer to procedure 4.19). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

8. Replace the connectors or cable from the digital board to the air circuit board (refer to procedure 4.25). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

9. Disconnect the air connectors at the seat section. Activate the back firm button and test for air pressure on the patients left hand side. Activate the back soft button and test for air suction on the patients left hand side.

Activate the seat firm button and test for air pressure on the patients right hand side. The pressure and suction is correct at both of the connectors.

Yes **No**
↓ → Go to step 11.

10. Ensure all hoses and bladders are free of kinks, pinching, and leaks. If this solves the problem, go to “Final Actions” on page 2-20. Otherwise, continue to step 11.

11. Pressure and suction are present at the connectors for all functions.

    Yes **No**
    ↓ → Go to RAP 13.

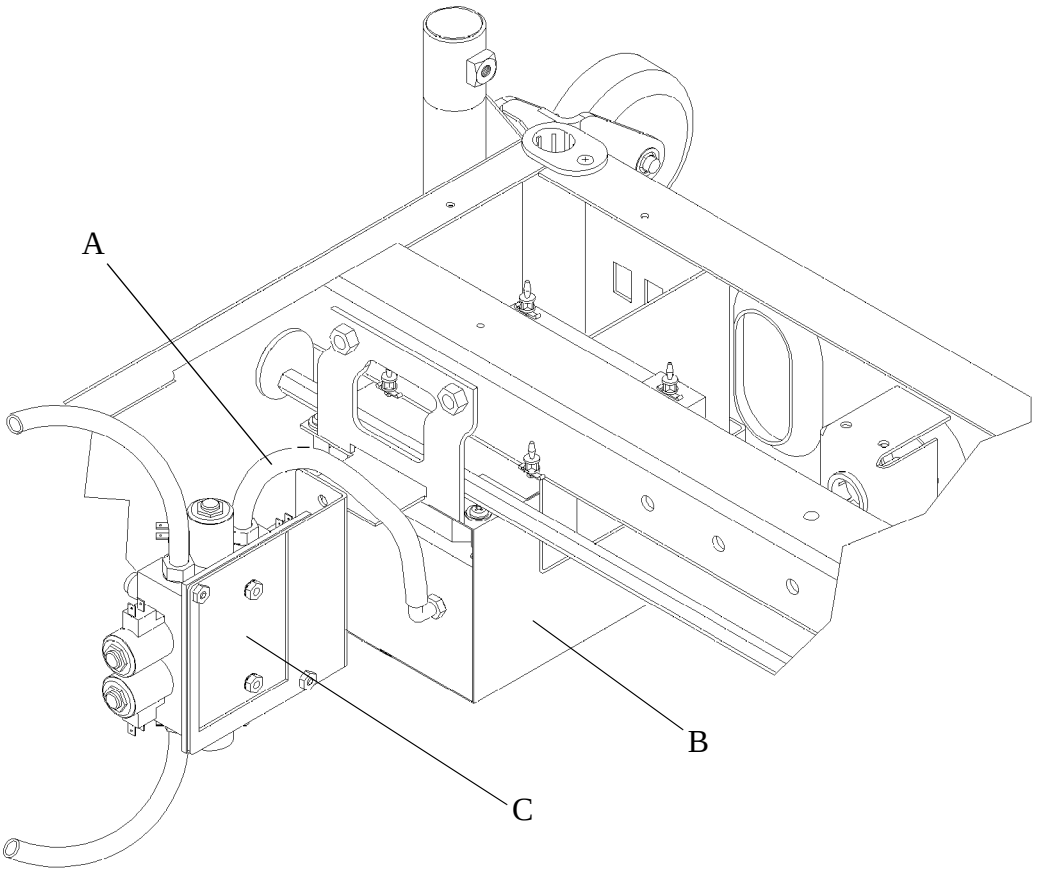
12. Go to RAP 21.

13. Press any bed air firm function button. The pump runs.

    Yes **No**
    ↓ → Go to RAP 16.

14. Disconnect the air line (A) from the compressor (B) to the top of the manifold (C) (see figure 2-16 on page 2-55). Press the firm button to activate the pump. The compressor actuates suction in the air line.

Figure 2-16. Air System (Old Style)



m013e025

Yes **No**

↓ → Replace the compressor (refer to procedure 4.23). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 21.

15. Go to RAP 21.

16. Set your VOM to measure V AC. At the mattress board connector P19, probe pin 1 (black) and pin 3 (white). The voltage is approximately 115 V AC or 230 V AC.

NOTE:
For high voltage checks, do not unplug the connectors.

2

NOTE:
120V AC if domestic, 230V AC if European.

Yes **No**
↓ → Go to step 19.

17. Set your VOM to measure V AC. At the mattress control board connector P20, probe pin 1 (black) and pin 3 (white). Press any of the firm buttons. The voltage is approximately 115V AC or 230V AC.

NOTE:
For high voltage checks, do not unplug the connectors.

NOTE:
120V AC if domestic, 230V AC if European.

Yes **No**
↓ → Replace the mattress control board (refer to procedure 4.24). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 21.

18. Replace the air compressor (refer to procedure 4.23). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 21.

19. Set your VOM to measure V AC. At the high voltage board connector P16, probe pin 1 (black) and pin 3 (white). The voltage is approximately 120V AC.

NOTE:
For high voltage checks, do not unplug the connectors.

NOTE:
120V AC if domestic, 230V AC if European.

Yes **No**
↓ → Replace the high voltage board (refer to procedure 4.18). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 21.

20. Replace the cable or connectors between the high voltage board and the air surface board (refer to procedure 4.18). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 21.

21. Set your VOM to measure V AC. At the mattress board connector P21, probe pin 1 (white) and connector P22 to the following pins while pressing

the siderail air function buttons (see table 2-1 on page 2-57). The voltage is approximately 115V AC or 230 V AC.

NOTE:
For high voltage checks, do not unplug the connectors.

NOTE:
120V AC if domestic, 230V AC if European.

Table 2-1. Pin Number, Wire Color, And Function

Pin#:	Wire Color:	Press Function:
1	Yellow	Back firm
2	Brown	Seat firm
5	Red	Seat soft
6	Violet	Seat soft
8	Pink	Seat soft
9	Tan	Seat firm

Yes **No**
↓ → Replace the mattress board (refer to procedure 4.24). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

22. Disconnect the mattress board connector 22. Using your VOM, check the continuity of each solenoid. Probe to a white wire in connector P21. The resistance of each solenoid is approximately 500k ohms.

Yes **No**
↓ → Replace the solenoid (refer to procedure 4.23). Refer to item 2 (see table 2-3 on page 2-64). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 23.

NOTE:
See "I/O Signal Reference" on page 2-64.

23. Replace the valve for the function that is malfunctioning (refer to procedure 4.23). Refer to item 2 (see table 2-3 on page 2-64).

NOTE:
See "I/O Signal Reference" on page 2-64.

This solves the problem.

Yes **No**
↓ → Call Hill-Rom Technical Support at (800) 445-3720.

24. Go to “Final Actions” on page 2-20.

2.15 Bed Air Surface Malfunction (Three Station)

The bed air surface does not function properly.

1. Activate all bed air surface switches in both siderails. Only one switch does not work.

   Yes **No**
   ↓ → Go to step 3.

2. Replace the defective switch (refer to procedure 4.26). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 3.

3. All of the switches in one siderail work while several of the switches in the opposite siderail fail.

   Yes **No**
   ↓ → Go to step 5.

4. Replace the siderail circuit board (refer to procedure 4.26). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 5.

5. Activate the bed air function switch. Audible clicks of the relay from the air circuit board can be heard.

   Yes **No**
   ↓ → Go to step 7.

6. Go to step 9.

7. Set your VOM to measure V DC. At the digital board connector P2, probe item 1 (see table 2-4 on page 2-64). The pin voltages are correct.

   Yes **No**
   ↓ → Replace the digital board (refer to procedure 4.19). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

8. Replace the connectors or cable from the digital board to the air circuit board (refer to procedure 4.25). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

9. Disconnect the air connectors at the seat section. Activate the back firm button and test for air pressure on the patients left hand side. Activate the back soft button and test for air release on the patients left hand side.

2

Activate the seat firm button and test for air pressure on the patients right hand side. The air pressure and air release is correct at both of the connectors.

Yes **No**
↓ → Go to step 11.

10. Ensure all hoses and bladders are free of kinks, pinching, and leaks. If this solves the problem, go to “Final Actions” on page 2-20. Otherwise, continue to step 11.

11. Pressure and suction are present at the connectors for all functions.

    Yes **No**
    ↓ → Go to RAP 13.

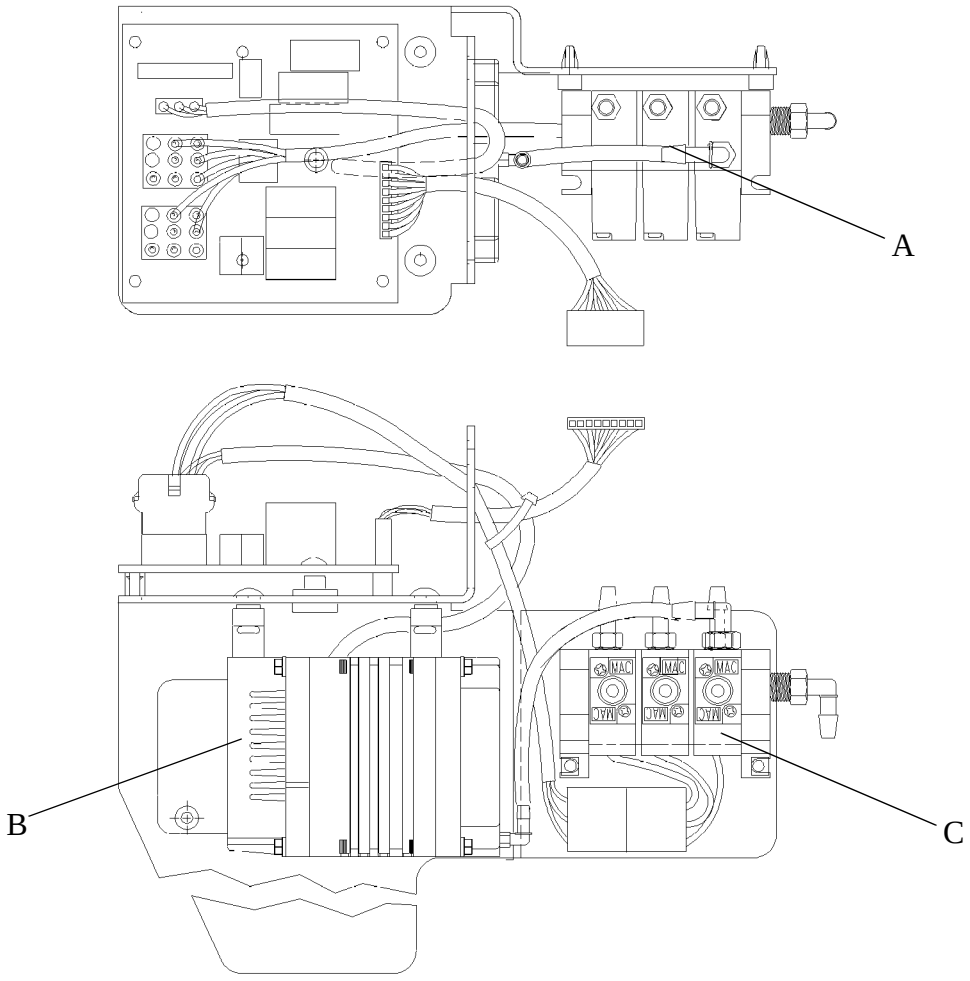
12. Go to RAP 21.

13. Press any bed air firm function button. The pump runs.

    Yes **No**
    ↓ → Go to RAP 16.

14. Disconnect the air line (A) from the compressor (B) to the top of the manifold (C) (see figure 2-17 on page 2-61). Press the firm button to activate the pump. The compressor actuates suction in the air line.

Figure 2-17. Air System (New Style)



Yes **No**

↓ → Replace the compressor (refer to procedure 4.25). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 21.

15. Go to RAP 21.

16. Set your VOM to measure V AC. At the mattress board connector P19, probe pin 1 (black) and pin 3 (white). The voltage is approximately 115 V AC or 230 V AC.

2

NOTE:
For high voltage checks, do not unplug the connectors.

NOTE:
120V AC if domestic, 230V AC if European.

Yes ↓ **No** → Go to step 19.

17. Set your VOM to measure V AC. At the mattress control board connector P20, probe pin 1 (black) and pin 3 (white). Press any of the firm buttons. The voltage is approximately 115V AC or 230V AC.

NOTE:
For high voltage checks, do not unplug the connectors.

NOTE:
120V AC if domestic, 230V AC if European.

Yes ↓ **No** → Replace the mattress control board (refer to procedure 4.24). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 21.

18. Replace the air compressor (refer to procedure 4.25). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 21.

19. Set your VOM to measure V AC. At the high voltage board connector P16, probe pin 1 (black) and pin 3 (white). The voltage is approximately 120V AC.

NOTE:
For high voltage checks, do not unplug the connectors.

NOTE:
120V AC if domestic, 230V AC if European.

Yes ↓ **No** → Replace the high voltage board (refer to procedure 4.18). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 21.

20. Replace the cable or connectors between the high voltage board and the air surface board (refer to procedure 4.18). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, continue to step 21.

21. Set your VOM to measure V AC. At the mattress board connector P21, probe pin 1 (white) and connector P22 to the following pins while pressing the siderail air function buttons (see table 2-2 on page 2-63). The voltage is approximately 115V AC or 230 V AC.

NOTE:
For high voltage checks, do not unplug the connectors.

NOTE:
120V AC if domestic, 230V AC if European.

Table 2-2. Pin Number, Wire Color, And Function

Pin#:	Wire Color:	Press Function:
1	Yellow	Back firm
2	Brown	Seat firm
5	Red	Seat soft
6	Violet	Seat soft
8	Pink	Seat soft
9	Tan	Seat firm

Yes ↓ **No** → Replace the mattress board (refer to procedure 4.24). If this solves the problem, go to "Final Actions" on page 2-20. Otherwise, call Hill-Rom Technical Support at (800) 445-3720.

NOTE:
See "I/O Signal Reference" on page 2-64.

22. Replace the valve for the function that is malfunctioning (refer to procedure 4.23). Refer to item 2 (see table 2-4 on page 2-64).

NOTE:
See "I/O Signal Reference" on page 2-64.

This solves the problem.

Yes ↓ **No** → Call Hill-Rom Technical Support at (800) 445-3720.

23. Go to "Final Actions" on page 2-20.

I/O Signal Reference

2

Table 2-3. Six Station Manifold

Input Command: Mattress Function											
Output Signal	**Pin No.**	**Wire Color**	**SF**	**SS**	**BF**	**BS**	**AI**	**BF/ SF**	**BS/ SS**	**BF/ SS**	**BS/SF**
Pump	11	GRN	X		X	X	X	X			
Lum	7	BLU			X	X		X	X		
Seat	8	VIO	X	X			X	X	X		
EXH1/V	9	RED		X		X			X		
EXH2/P	10	YEL	X	X	X		X	X	X		
Super-visory	13	ORG	X	X	X	X	X	X	X		
X= ON= 5V DC (approximately)											
Legend:											
SF= Seat firm SS= Seat soft BF= Back firm BS= Back soft AI= Auto inflate											

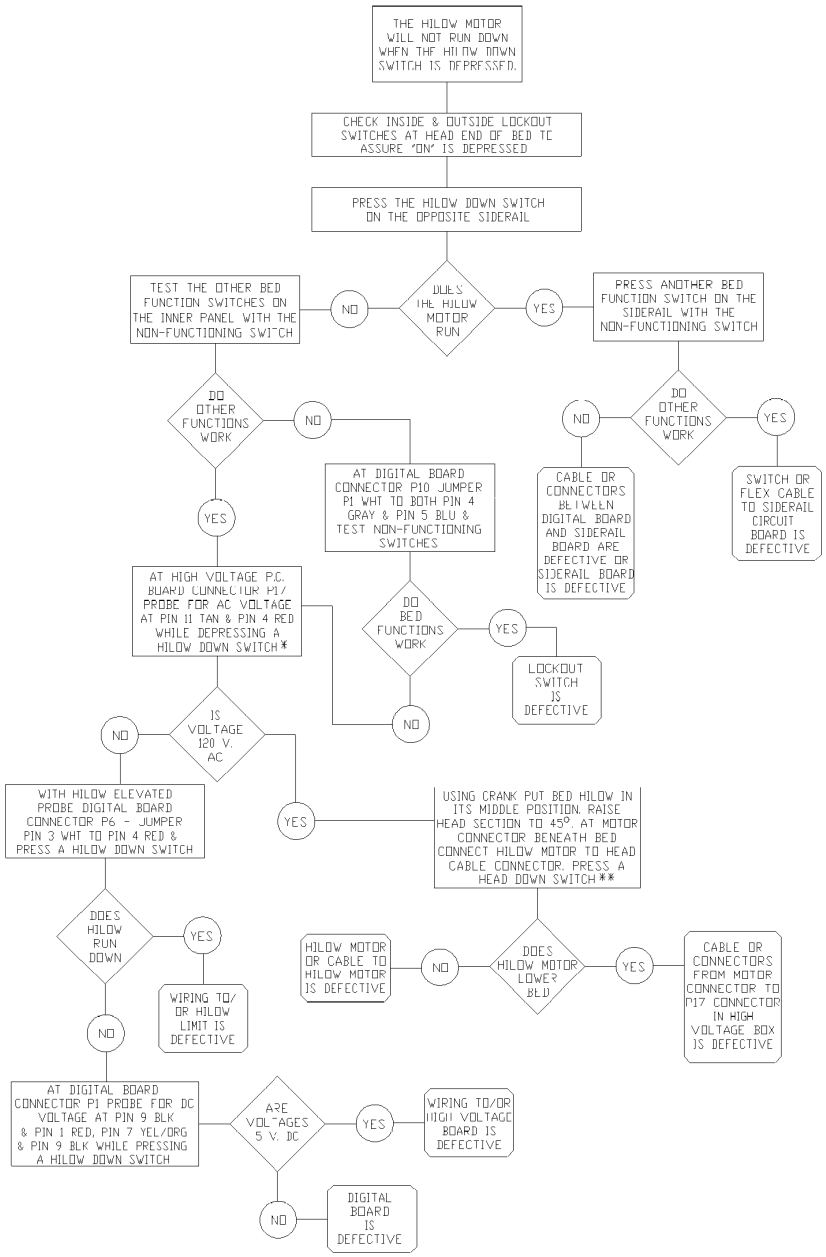
Table 2-4. Three Station Manifold

Input Command: Mattress Function											
Output Signal	**Pin No.**	**Wire Color**	**SF**	**SS**	**BF**	**BS**	**AI**	**BF/ SF**	**BS/ SS**	**BF/ SS**	**BS/SF**
Pump	11	GRN	X		X	X	X	X			
Lum	7	BLU			X	X		X	X		
Seat	8	VIO	X	X			X	X	X		
In/out	9	RED		X		X			X		
Super-visory	12	ORG	X	X	X	X	X	X	X		
X= ON= 5V DC (approximately)											
Legend:											
SF= Seat firm SS= Seat soft BF= Back firm BS= Back soft AI= Auto inflate											

2

Troubleshooting Flowcharts

The bed will not raise when the hilow up switch is activated.


THE HILOW MOTOR WILL NOT RUN DOWN WHEN THE HILOW DOWN SWITCH IS DEPRESSED.
CHECK INSIDE & OUTSIDE LOCKOUT SWITCHES AT HEAD END OF BED TO ASSURE "ON" IS DEPRESSED
PRESS THE HILOW DOWN SWITCH ON THE OPPOSITE SIDERAIL
DOES THE HILOW MOTOR RUN
NO
YES
TEST THE OTHER BED FUNCTION SWITCHES ON THE INNER PANEL WITH THE NON-FUNCTIONING SWITCH
PRESS ANOTHER BED FUNCTION SWITCH ON THE SIDERAIL WITH THE NON-FUNCTIONING SWITCH
DO OTHER FUNCTIONS WORK
NO
YES
DO OTHER FUNCTIONS WORK
NO
YES
AT DIGITAL BOARD CONNECTOR P10 JUMPER P1 WHT TO BOTH PIN 4 GRAY & PIN 5 BLU & TEST NON-FUNCTIONING SWITCHES
CABLE OR CONNECTORS BETWEEN DIGITAL BOARD AND SIDERAIL BOARD ARE DEFECTIVE OR SIDERAIL BOARD IS DEFECTIVE
SWITCH OR FLEX CABLE TO SIDERAIL CIRCUIT BOARD IS DEFECTIVE
AT HIGH VOLTAGE P.C. BOARD CONNECTOR P17 PROBE FOR AC VOLTAGE AT PIN 11 TAN & PIN 4 RED WHILE DEPRESSING A HILOW DOWN SWITCH*
DO BED FUNCTIONS WORK
YES
NO
LOCKOUT SWITCH IS DEFECTIVE
IS VOLTAGE 120 V. AC
NO
YES
WITH HILOW ELEVATED PROBE DIGITAL BOARD CONNECTOR P6 - JUMPER PIN 3 WHT TO PIN 4 RED & PRESS A HILOW DOWN SWITCH
USING CRANK PUT BED HILOW IN ITS MIDDLE POSITION. RAISE HEAD SECTION TO 45°. AT MOTOR CONNECTOR BENEATH BED CONNECT HILOW MOTOR TO HEAD CABLE CONNECTOR. PRESS A HEAD DOWN SWITCH**
DOES HILOW RUN DOWN
YES
NO
WIRING TO/OR HILOW LIMIT IS DEFECTIVE
HILOW MOTOR OR CABLE TO HILOW MOTOR IS DEFECTIVE
NO
DOES HILOW MOTOR LOWER BED
YES
CABLE OR CONNECTORS FROM MOTOR CONNECTOR TO P17 CONNECTOR IN HIGH VOLTAGE BOX IS DEFECTIVE
AT DIGITAL BOARD CONNECTOR P1 PROBE FOR DC VOLTAGE AT PIN 9 BLK & PIN 1 RED, PIN 7 YEL/ORG & PIN 9 BLK WHILE PRESSING A HILOW DOWN SWITCH
ARE VOLTAGES 5 V. DC
YES
WIRING TO/OR HIGH VOLTAGE BOARD IS DEFECTIVE
NO
DIGITAL BOARD IS DEFECTIVE

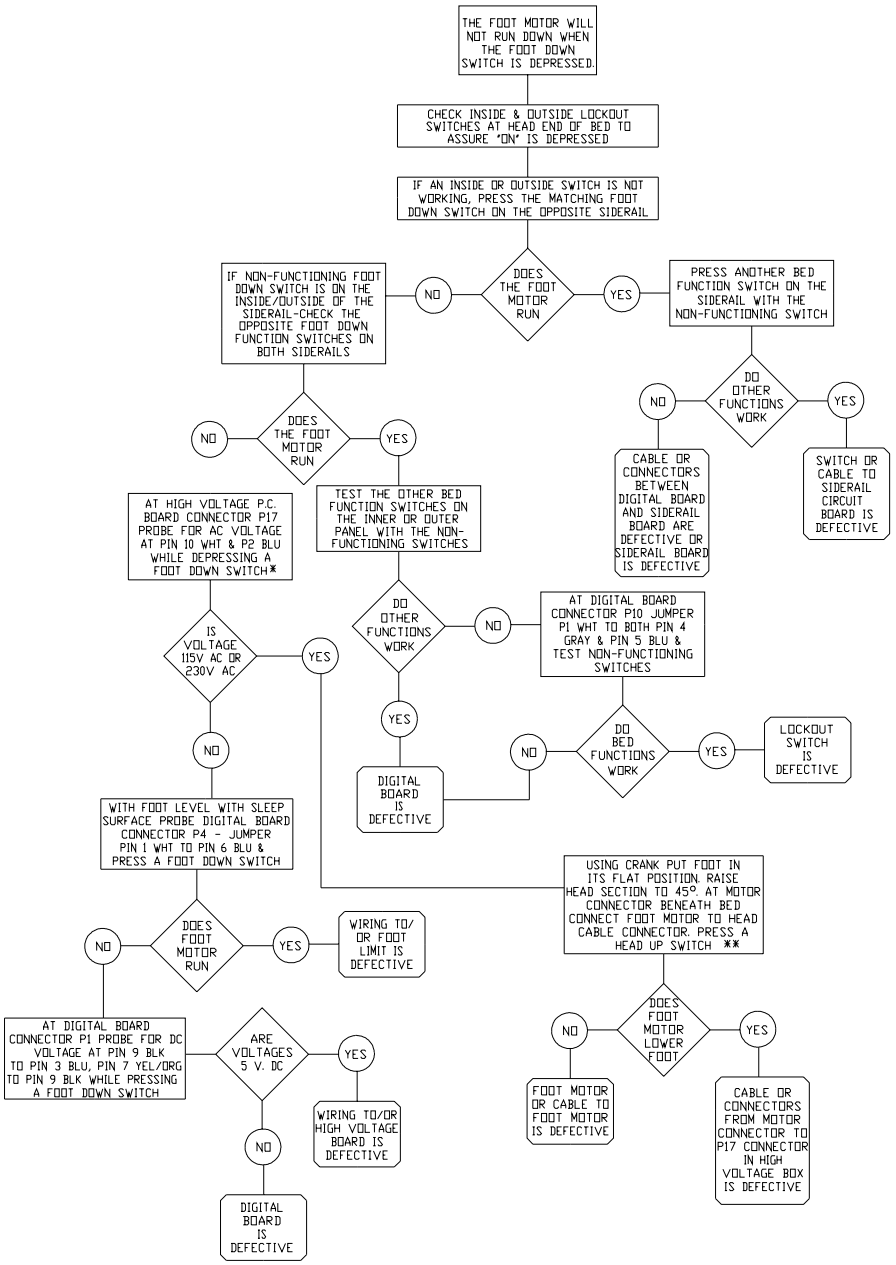
m013e069

@NOTE: 120V AC if domestic, 230V AC if European.
***NOTE**: For high voltage checks do not unplug connectors.

CAUTION:
**** Limit switches are not functioning during this test.**

2

The bed will not lower when the hilow down switch is activated.


THE FOOT MOTOR WILL NOT RUN DOWN WHEN THE FOOT DOWN SWITCH IS DEPRESSED.
CHECK INSIDE & OUTSIDE LOCKOUT SWITCHES AT HEAD END OF BED TO ASSURE 'ON' IS DEPRESSED
IF AN INSIDE OR OUTSIDE SWITCH IS NOT WORKING, PRESS THE MATCHING FOOT DOWN SWITCH ON THE OPPOSITE SIDERAIL
DOES THE FOOT MOTOR RUN
NO
YES
IF NON-FUNCTIONING FOOT DOWN SWITCH IS ON THE INSIDE/OUTSIDE OF THE SIDERAIL-CHECK THE OPPOSITE FOOT DOWN FUNCTION SWITCHES ON BOTH SIDERAILS
PRESS ANOTHER BED FUNCTION SWITCH ON THE SIDERAIL WITH THE NON-FUNCTIONING SWITCH
DOES THE FOOT MOTOR RUN
NO
YES
DO OTHER FUNCTIONS WORK
NO
YES
CABLE OR CONNECTORS BETWEEN DIGITAL BOARD AND SIDERAIL BOARD ARE DEFECTIVE OR SIDERAIL BOARD IS DEFECTIVE
SWITCH OR CABLE TO SIDERAIL CIRCUIT BOARD IS DEFECTIVE
AT HIGH VOLTAGE P.C. BOARD CONNECTOR P17 PROBE FOR AC VOLTAGE AT PIN 10 WHT & P2 BLU WHILE DEPRESSING A FOOT DOWN SWITCH*
TEST THE OTHER BED FUNCTION SWITCHES ON THE INNER OR OUTER PANEL WITH THE NON-FUNCTIONING SWITCHES
DO OTHER FUNCTIONS WORK
NO
AT DIGITAL BOARD CONNECTOR P10 JUMPER P1 WHT TO BOTH PIN 4 GRAY & PIN 5 BLU & TEST NON-FUNCTIONING SWITCHES
IS VOLTAGE 115V AC OR 230V AC
YES
NO
YES
DO BED FUNCTIONS WORK
NO
YES
LOCKOUT SWITCH IS DEFECTIVE
DIGITAL BOARD IS DEFECTIVE
WITH FOOT LEVEL WITH SLEEP SURFACE PROBE DIGITAL BOARD CONNECTOR P4 - JUMPER PIN 1 WHT TO PIN 6 BLU & PRESS A FOOT DOWN SWITCH
USING CRANK PUT FOOT IN ITS FLAT POSITION. RAISE HEAD SECTION TO 45°. AT MOTOR CONNECTOR BENEATH BED CONNECT FOOT MOTOR TO HEAD CABLE CONNECTOR. PRESS A HEAD UP SWITCH **
DOES FOOT MOTOR RUN
NO
YES
WIRING TO/ OR FOOT LIMIT IS DEFECTIVE
AT DIGITAL BOARD CONNECTOR P1 PROBE FOR DC VOLTAGE AT PIN 9 BLK TO PIN 3 BLU, PIN 7 YEL/ORG TO PIN 9 BLK WHILE PRESSING A FOOT DOWN SWITCH
ARE VOLTAGES 5 V. DC
YES
NO
WIRING TO/OR HIGH VOLTAGE BOARD IS DEFECTIVE
DIGITAL BOARD IS DEFECTIVE
DOES FOOT MOTOR LOWER FOOT
NO
YES
FOOT MOTOR OR CABLE TO FOOT MOTOR IS DEFECTIVE
CABLE OR CONNECTORS FROM MOTOR CONNECTOR TO P17 CONNECTOR IN HIGH VOLTAGE BOX IS DEFECTIVE

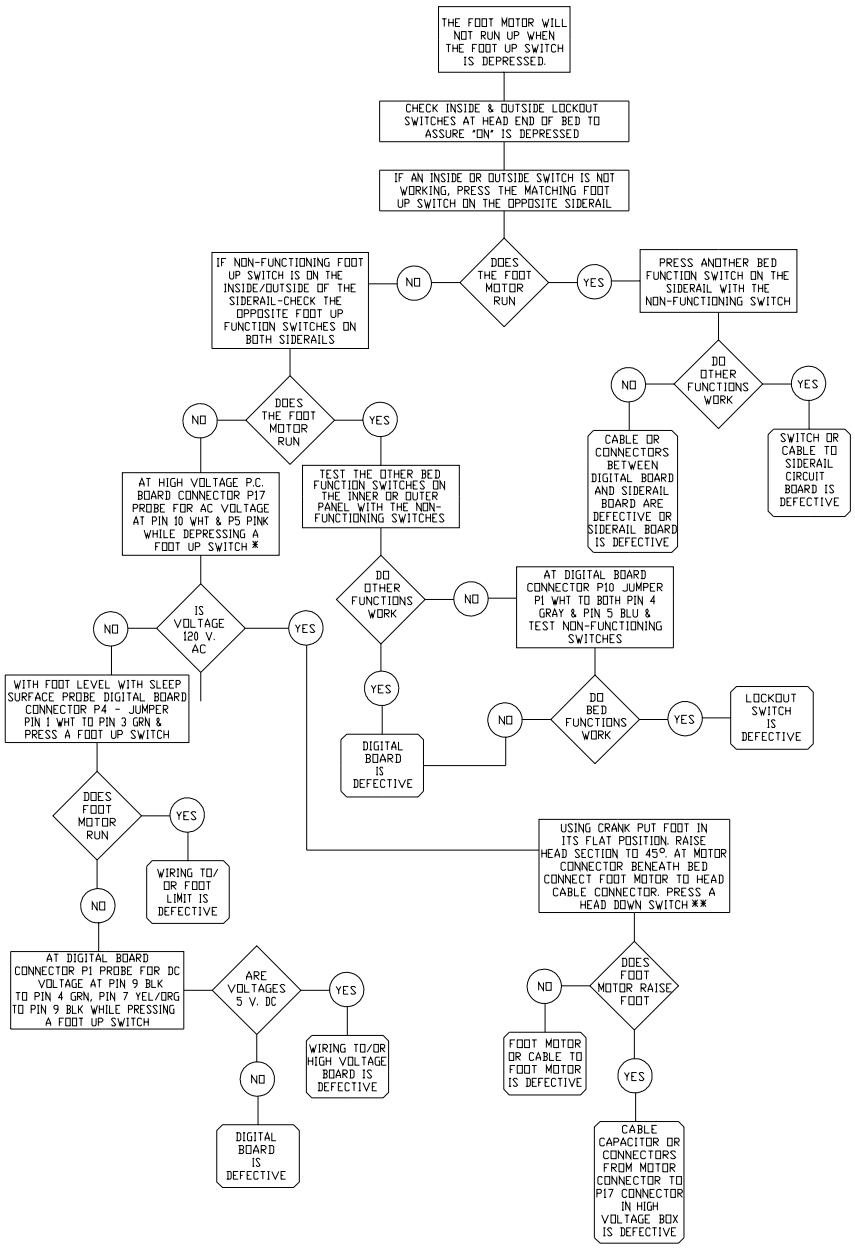
m013e070

@NOTE: 120V AC if domestic, 230V AC if European.
***NOTE**: For high voltage checks do not unplug connectors.

CAUTION:
**** Limit switches are not functioning during this test.**

2

The foot section will not raise when the foot up switch is activated.

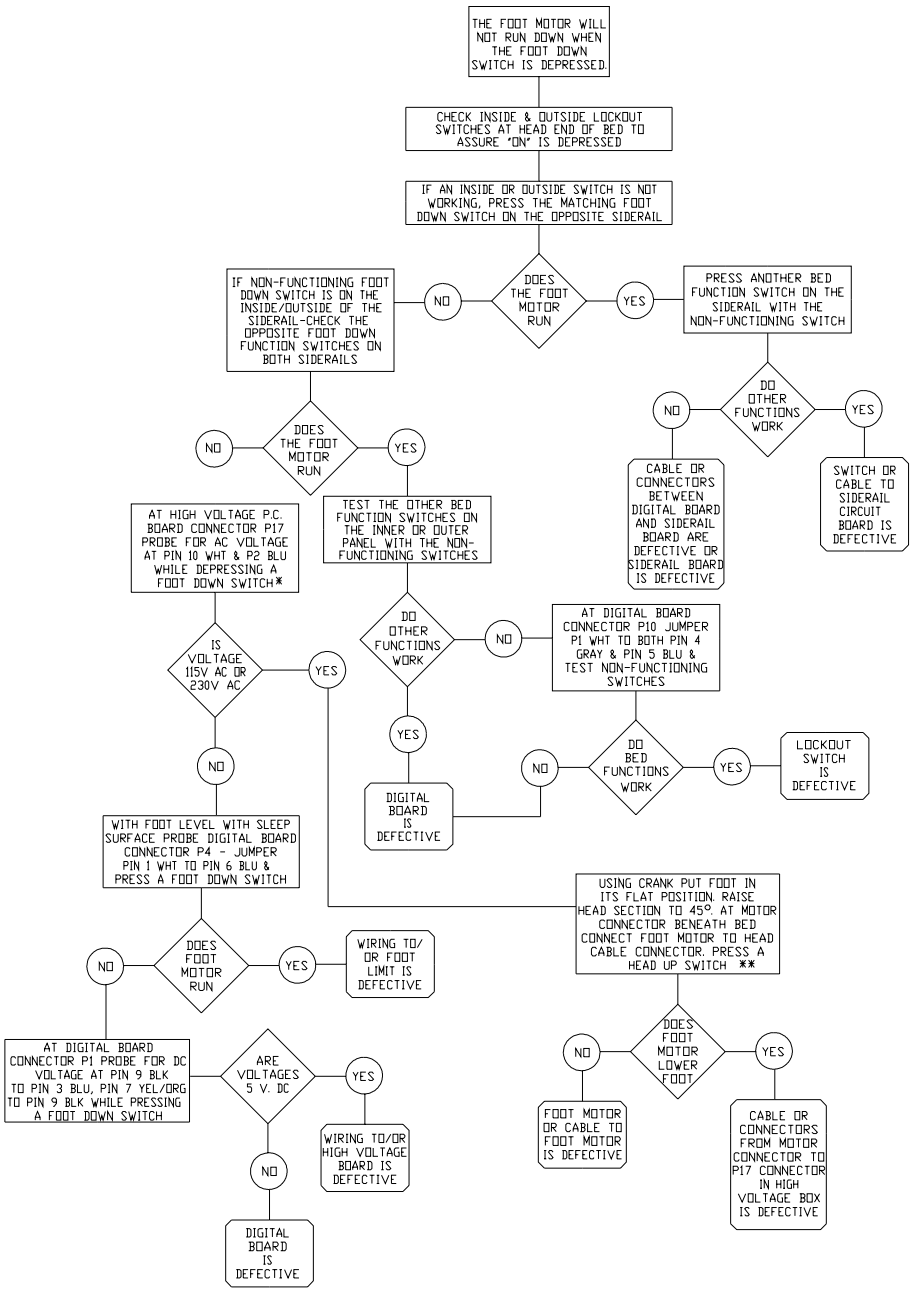

THE FOOT MOTOR WILL NOT RUN UP WHEN THE FOOT UP SWITCH IS DEPRESSED.
CHECK INSIDE & OUTSIDE LOCKOUT SWITCHES AT HEAD END OF BED TO ASSURE "ON" IS DEPRESSED
IF AN INSIDE OR OUTSIDE SWITCH IS NOT WORKING, PRESS THE MATCHING FOOT UP SWITCH ON THE OPPOSITE SIDERAIL
DOES THE FOOT MOTOR RUN
NO
YES
IF NON-FUNCTIONING FOOT UP SWITCH IS ON THE INSIDE/OUTSIDE OF THE SIDERAIL-CHECK THE OPPOSITE FOOT UP FUNCTION SWITCHES ON BOTH SIDERAILS
PRESS ANOTHER BED FUNCTION SWITCH ON THE SIDERAIL WITH THE NON-FUNCTIONING SWITCH
DO OTHER FUNCTIONS WORK
CABLE OR CONNECTORS BETWEEN DIGITAL BOARD AND SIDERAIL BOARD ARE DEFECTIVE OR SIDERAIL BOARD IS DEFECTIVE
SWITCH OR CABLE TO SIDERAIL CIRCUIT BOARD IS DEFECTIVE
DOES THE FOOT MOTOR RUN
AT HIGH VOLTAGE P.C. BOARD CONNECTOR P17 PROBE FOR AC VOLTAGE AT PIN 10 WHT & P5 PINK WHILE DEPRESSING A FOOT UP SWITCH *
TEST THE OTHER BED FUNCTION SWITCHES ON THE INNER OR OUTER PANEL WITH THE NON-FUNCTIONING SWITCHES
IS VOLTAGE 120 V. AC
DO OTHER FUNCTIONS WORK
AT DIGITAL BOARD CONNECTOR P10 JUMPER P1 WHT TO BOTH PIN 4 GRAY & PIN 5 BLU & TEST NON-FUNCTIONING SWITCHES
WITH FOOT LEVEL WITH SLEEP SURFACE PROBE DIGITAL BOARD CONNECTOR P4 - JUMPER PIN 1 WHT TO PIN 3 GRN & PRESS A FOOT UP SWITCH
DIGITAL BOARD IS DEFECTIVE
DO BED FUNCTIONS WORK
LOCKOUT SWITCH IS DEFECTIVE
DOES FOOT MOTOR RUN
WIRING TO/OR FOOT LIMIT IS DEFECTIVE
USING CRANK PUT FOOT IN ITS FLAT POSITION. RAISE HEAD SECTION TO 45°. AT MOTOR CONNECTOR BENEATH BED CONNECT FOOT MOTOR TO HEAD CABLE CONNECTOR. PRESS A HEAD DOWN SWITCH **
AT DIGITAL BOARD CONNECTOR P1 PROBE FOR DC VOLTAGE AT PIN 9 BLK TO PIN 4 GRN, PIN 7 YEL/ORG TO PIN 9 BLK WHILE PRESSING A FOOT UP SWITCH
ARE VOLTAGES 5 V. DC
WIRING TO/OR HIGH VOLTAGE BOARD IS DEFECTIVE
DIGITAL BOARD IS DEFECTIVE
DOES FOOT MOTOR RAISE FOOT
FOOT MOTOR OR CABLE TO FOOT MOTOR IS DEFECTIVE
CABLE CAPACITOR OR CONNECTORS FROM MOTOR CONNECTOR TO P17 CONNECTOR IN HIGH VOLTAGE BOX IS DEFECTIVE

@NOTE: 120V AC if domestic, 230V AC if European.
***NOTE**: For high voltage checks do not unplug connectors.

CAUTION:
**** Limit switches are not functioning during this test.**

2

The foot section will not lower when the foot down switch is activated.


THE FOOT MOTOR WILL NOT RUN DOWN WHEN THE FOOT DOWN SWITCH IS DEPRESSED.
CHECK INSIDE & OUTSIDE LOCKOUT SWITCHES AT HEAD END OF BED TO ASSURE "ON" IS DEPRESSED
IF AN INSIDE OR OUTSIDE SWITCH IS NOT WORKING, PRESS THE MATCHING FOOT DOWN SWITCH ON THE OPPOSITE SIDERAIL
DOES THE FOOT MOTOR RUN
NO
YES
IF NON-FUNCTIONING FOOT DOWN SWITCH IS ON THE INSIDE/OUTSIDE OF THE SIDERAIL-CHECK THE OPPOSITE FOOT DOWN FUNCTION SWITCHES ON BOTH SIDERAILS
PRESS ANOTHER BED FUNCTION SWITCH ON THE SIDERAIL WITH THE NON-FUNCTIONING SWITCH
DO OTHER FUNCTIONS WORK
CABLE OR CONNECTORS BETWEEN DIGITAL BOARD AND SIDERAIL BOARD ARE DEFECTIVE OR SIDERAIL BOARD IS DEFECTIVE
SWITCH OR CABLE TO SIDERAIL CIRCUIT BOARD IS DEFECTIVE
AT HIGH VOLTAGE P.C. BOARD CONNECTOR P17 PROBE FOR AC VOLTAGE AT PIN 10 WHT & P2 BLU WHILE DEPRESSING A FOOT DOWN SWITCH*
TEST THE OTHER BED FUNCTION SWITCHES ON THE INNER OR OUTER PANEL WITH THE NON-FUNCTIONING SWITCHES
IS VOLTAGE 115V AC OR 230V AC
AT DIGITAL BOARD CONNECTOR P10 JUMPER P1 WHT TO BOTH PIN 4 GRAY & PIN 5 BLU & TEST NON-FUNCTIONING SWITCHES
DO BED FUNCTIONS WORK
LOCKOUT SWITCH IS DEFECTIVE
DIGITAL BOARD IS DEFECTIVE
WITH FOOT LEVEL WITH SLEEP SURFACE PROBE DIGITAL BOARD CONNECTOR P4 - JUMPER PIN 1 WHT TO PIN 6 BLU & PRESS A FOOT DOWN SWITCH
USING CRANK PUT FOOT IN ITS FLAT POSITION. RAISE HEAD SECTION TO 45°. AT MOTOR CONNECTOR BENEATH BED CONNECT FOOT MOTOR TO HEAD CABLE CONNECTOR. PRESS A HEAD UP SWITCH **
DOES FOOT MOTOR RUN
WIRING TO/ OR FOOT LIMIT IS DEFECTIVE
AT DIGITAL BOARD CONNECTOR P1 PROBE FOR DC VOLTAGE AT PIN 9 BLK TO PIN 3 BLU, PIN 7 YEL/ORG TO PIN 9 BLK WHILE PRESSING A FOOT DOWN SWITCH
ARE VOLTAGES 5 V. DC
WIRING TO/OR HIGH VOLTAGE BOARD IS DEFECTIVE
DIGITAL BOARD IS DEFECTIVE
DOES FOOT MOTOR LOWER FOOT
FOOT MOTOR OR CABLE TO FOOT MOTOR IS DEFECTIVE
CABLE OR CONNECTORS FROM MOTOR CONNECTOR TO P17 CONNECTOR IN HIGH VOLTAGE BOX IS DEFECTIVE

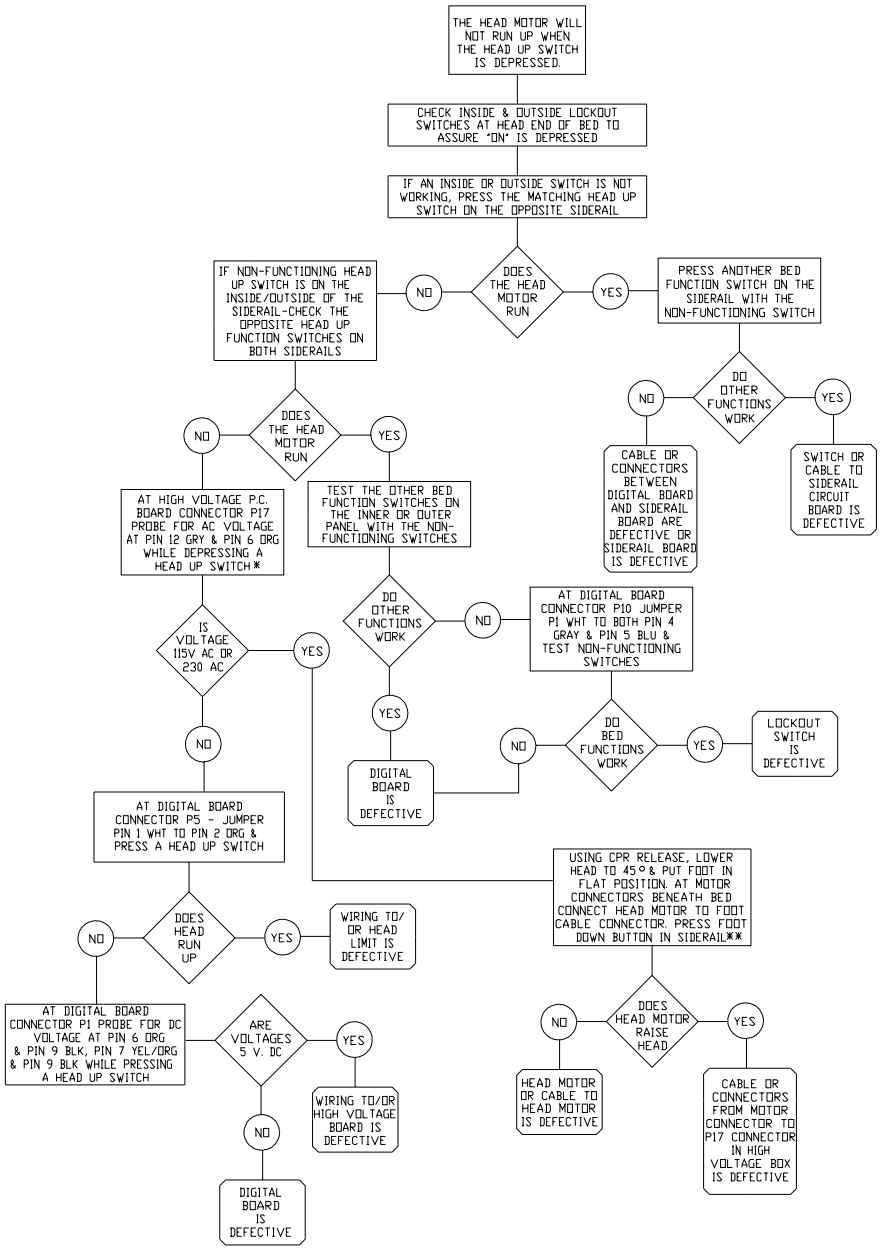
m013e072

@NOTE: 120V AC if domestic, 230V AC if European.
***NOTE**: For high voltage checks do not unplug connectors.

CAUTION:
**** Limit switches are not functioning during this test.**

2

The head section will not raise when the head up switch is activated.


THE HEAD MOTOR WILL NOT RUN UP WHEN THE HEAD UP SWITCH IS DEPRESSED.
CHECK INSIDE & OUTSIDE LOCKOUT SWITCHES AT HEAD END OF BED TO ASSURE "ON" IS DEPRESSED
IF AN INSIDE OR OUTSIDE SWITCH IS NOT WORKING, PRESS THE MATCHING HEAD UP SWITCH ON THE OPPOSITE SIDERAIL
DOES THE HEAD MOTOR RUN
NO
YES
IF NON-FUNCTIONING HEAD UP SWITCH IS ON THE INSIDE/OUTSIDE OF THE SIDERAIL-CHECK THE OPPOSITE HEAD UP FUNCTION SWITCHES ON BOTH SIDERAILS
PRESS ANOTHER BED FUNCTION SWITCH ON THE SIDERAIL WITH THE NON-FUNCTIONING SWITCH
DOES THE HEAD MOTOR RUN
NO
YES
AT HIGH VOLTAGE P.C. BOARD CONNECTOR P17 PROBE FOR AC VOLTAGE AT PIN 12 GRY & PIN 6 ORG WHILE DEPRESSING A HEAD UP SWITCH*
TEST THE OTHER BED FUNCTION SWITCHES ON THE INNER OR OUTER PANEL WITH THE NON-FUNCTIONING SWITCHES
DO OTHER FUNCTIONS WORK
NO
YES
CABLE OR CONNECTORS BETWEEN DIGITAL BOARD AND SIDERAIL BOARD ARE DEFECTIVE OR SIDERAIL BOARD IS DEFECTIVE
SWITCH OR CABLE TO SIDERAIL CIRCUIT BOARD IS DEFECTIVE
AT DIGITAL BOARD CONNECTOR P10 JUMPER P1 WHT TO BOTH PIN 4 GRAY & PIN 5 BLU & TEST NON-FUNCTIONING SWITCHES
IS VOLTAGE 115V AC OR 230 AC
YES
NO
DIGITAL BOARD IS DEFECTIVE
DO BED FUNCTIONS WORK
NO
YES
LOCKOUT SWITCH IS DEFECTIVE
AT DIGITAL BOARD CONNECTOR P5 - JUMPER PIN 1 WHT TO PIN 2 ORG & PRESS A HEAD UP SWITCH
USING CPR RELEASE, LOWER HEAD TO 45° & PUT FOOT IN FLAT POSITION. AT MOTOR CONNECTORS BENEATH BED CONNECT HEAD MOTOR TO FOOT CABLE CONNECTOR. PRESS FOOT DOWN BUTTON IN SIDERAIL**
DOES HEAD RUN UP
NO
YES
WIRING TO/OR HEAD LIMIT IS DEFECTIVE
AT DIGITAL BOARD CONNECTOR P1 PROBE FOR DC VOLTAGE AT PIN 6 ORG & PIN 9 BLK, PIN 7 YEL/ORG & PIN 9 BLK WHILE PRESSING A HEAD UP SWITCH
ARE VOLTAGES 5 V. DC
YES
NO
WIRING TO/OR HIGH VOLTAGE BOARD IS DEFECTIVE
DIGITAL BOARD IS DEFECTIVE
DOES HEAD MOTOR RAISE HEAD
NO
YES
HEAD MOTOR OR CABLE TO HEAD MOTOR IS DEFECTIVE
CABLE OR CONNECTORS FROM MOTOR CONNECTOR TO P17 CONNECTOR IN HIGH VOLTAGE BOX IS DEFECTIVE

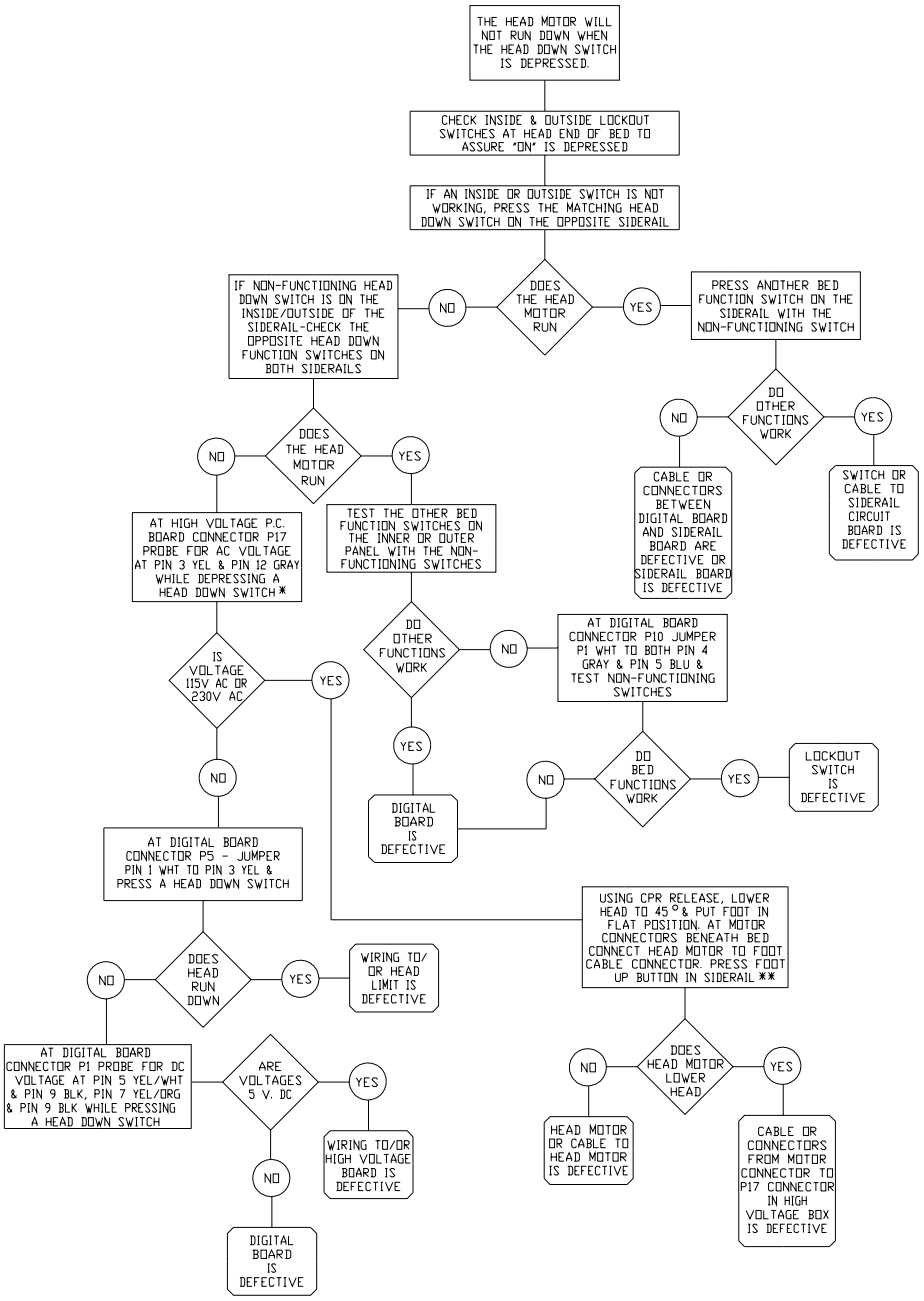
m013e073

@NOTE: 120V AC if domestic, 230V AC if European.
***NOTE**: For high voltage checks do not unplug connectors.

CAUTION:
**** Limit switches are not functioning during this test.**

2

The head section will not lower when the head down switch is activated.

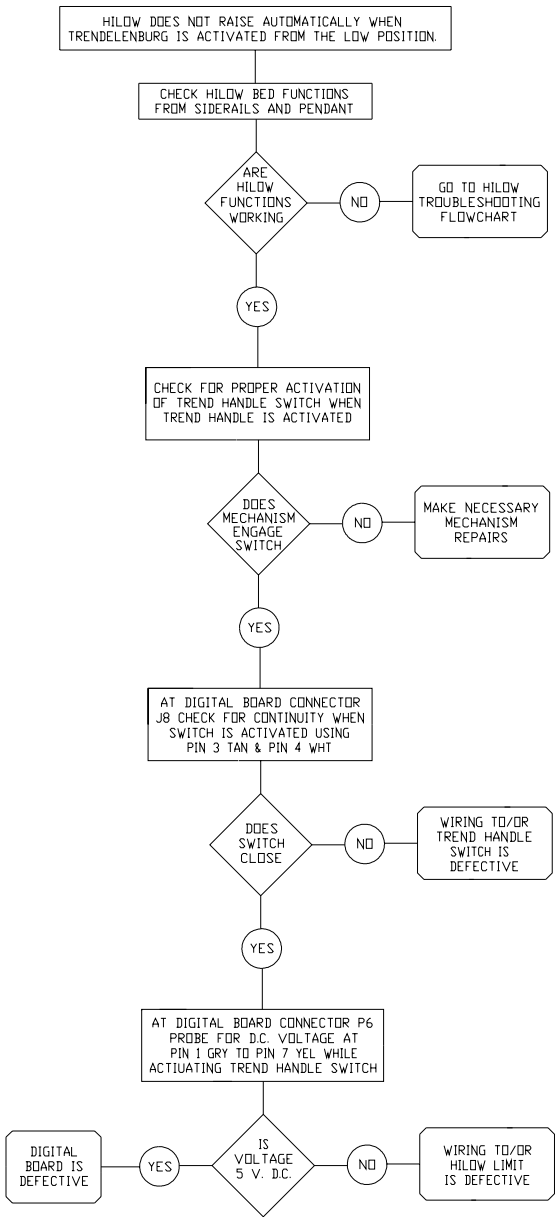

THE HEAD MOTOR WILL NOT RUN DOWN WHEN THE HEAD DOWN SWITCH IS DEPRESSED.
CHECK INSIDE & OUTSIDE LOCKOUT SWITCHES AT HEAD END OF BED TO ASSURE "ON" IS DEPRESSED
IF AN INSIDE OR OUTSIDE SWITCH IS NOT WORKING, PRESS THE MATCHING HEAD DOWN SWITCH ON THE OPPOSITE SIDERAIL
DOES THE HEAD MOTOR RUN
NO
YES
IF NON-FUNCTIONING HEAD DOWN SWITCH IS ON THE INSIDE/OUTSIDE OF THE SIDERAIL-CHECK THE OPPOSITE HEAD DOWN FUNCTION SWITCHES ON BOTH SIDERAILS
PRESS ANOTHER BED FUNCTION SWITCH ON THE SIDERAIL WITH THE NON-FUNCTIONING SWITCH
DO OTHER FUNCTIONS WORK
NO
YES
CABLE OR CONNECTORS BETWEEN DIGITAL BOARD AND SIDERAIL BOARD ARE DEFECTIVE OR SIDERAIL BOARD IS DEFECTIVE
SWITCH OR CABLE TO SIDERAIL CIRCUIT BOARD IS DEFECTIVE
DOES THE HEAD MOTOR RUN
NO
YES
AT HIGH VOLTAGE P.C. BOARD CONNECTOR P17 PROBE FOR AC VOLTAGE AT PIN 3 YEL & PIN 12 GRAY WHILE DEPRESSING A HEAD DOWN SWITCH*
TEST THE OTHER BED FUNCTION SWITCHES ON THE INNER OR OUTER PANEL WITH THE NON-FUNCTIONING SWITCHES
IS VOLTAGE 115V AC OR 230V AC
YES
NO
DO OTHER FUNCTIONS WORK
NO
AT DIGITAL BOARD CONNECTOR P10 JUMPER P1 WHT TO BOTH PIN 4 GRAY & PIN 5 BLU & TEST NON-FUNCTIONING SWITCHES
YES
DIGITAL BOARD IS DEFECTIVE
DO BED FUNCTIONS WORK
NO
YES
LOCKOUT SWITCH IS DEFECTIVE
AT DIGITAL BOARD CONNECTOR P5 - JUMPER PIN 1 WHT TO PIN 3 YEL & PRESS A HEAD DOWN SWITCH
USING CPR RELEASE, LOWER HEAD TO 45° & PUT FOOT IN FLAT POSITION. AT MOTOR CONNECTORS BENEATH BED CONNECT HEAD MOTOR TO FOOT CABLE CONNECTOR. PRESS FOOT UP BUTTON IN SIDERAIL**
DOES HEAD RUN DOWN
NO
YES
WIRING TO/OR HEAD LIMIT IS DEFECTIVE
AT DIGITAL BOARD CONNECTOR P1 PROBE FOR DC VOLTAGE AT PIN 5 YEL/WHT & PIN 9 BLK, PIN 7 YEL/ORG & PIN 9 BLK WHILE PRESSING A HEAD DOWN SWITCH
ARE VOLTAGES 5 V. DC
YES
NO
WIRING TO/OR HIGH VOLTAGE BOARD IS DEFECTIVE
DIGITAL BOARD IS DEFECTIVE
DOES HEAD MOTOR LOWER HEAD
NO
YES
HEAD MOTOR OR CABLE TO HEAD MOTOR IS DEFECTIVE
CABLE OR CONNECTORS FROM MOTOR CONNECTOR TO P17 CONNECTOR IN HIGH VOLTAGE BOX IS DEFECTIVE

m013e074

@NOTE: 120V AC if domestic, 230V AC if European.
***NOTE**: For high voltage checks do not unplug connectors.

CAUTION:
**** Limit switches are not functioning during this test.**

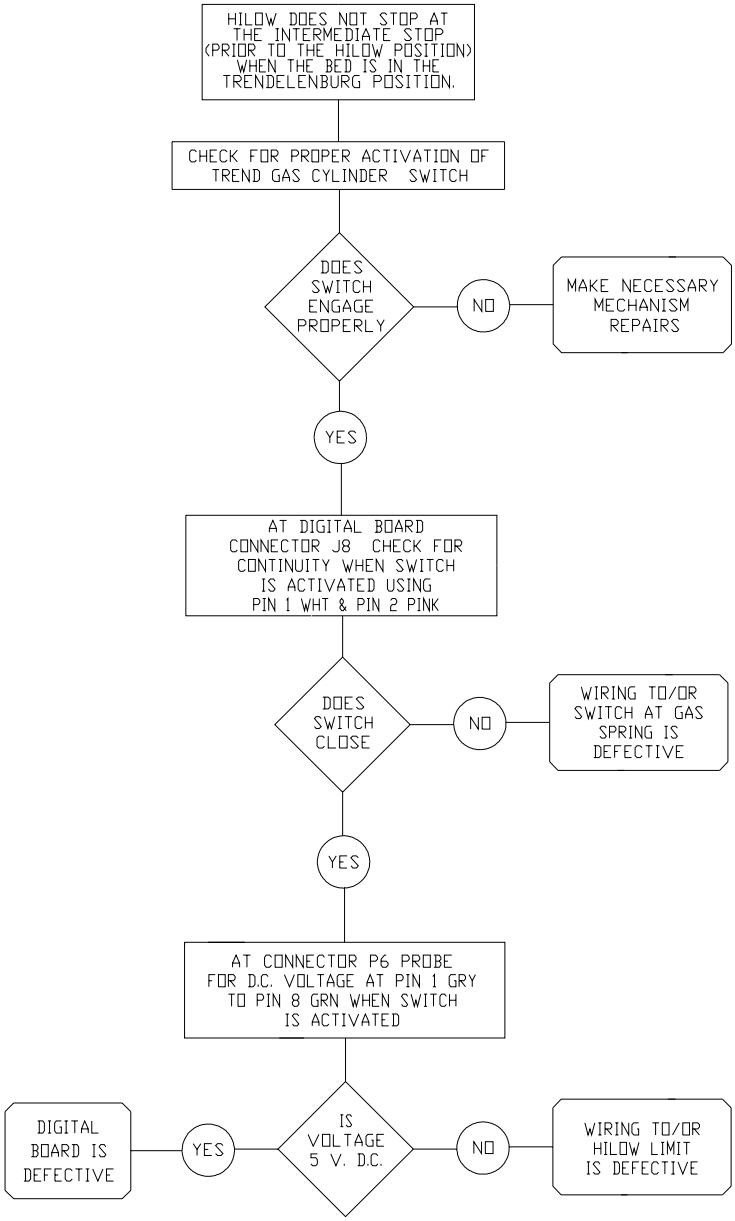
The hilow does not raise automatically when the Trendelenburg is activated from the low position.


HILOW DOES NOT RAISE AUTOMATICALLY WHEN TRENDELENBURG IS ACTIVATED FROM THE LOW POSITION.
CHECK HILOW BED FUNCTIONS FROM SIDERAILS AND PENDANT
ARE HILOW FUNCTIONS WORKING
NO
GO TO HILOW TROUBLESHOOTING FLOWCHART
YES
CHECK FOR PROPER ACTIVATION OF TREND HANDLE SWITCH WHEN TREND HANDLE IS ACTIVATED
DOES MECHANISM ENGAGE SWITCH
NO
MAKE NECESSARY MECHANISM REPAIRS
YES
AT DIGITAL BOARD CONNECTOR J8 CHECK FOR CONTINUITY WHEN SWITCH IS ACTIVATED USING PIN 3 TAN & PIN 4 WHT
DOES SWITCH CLOSE
NO
WIRING TO/OR TREND HANDLE SWITCH IS DEFECTIVE
YES
AT DIGITAL BOARD CONNECTOR P6 PROBE FOR D.C. VOLTAGE AT PIN 1 GRY TO PIN 7 YEL WHILE ACTIUATING TREND HANDLE SWITCH
IS VOLTAGE 5 V. D.C.
NO
WIRING TO/OR HILOW LIMIT IS DEFECTIVE
YES
DIGITAL BOARD IS DEFECTIVE

m013e075

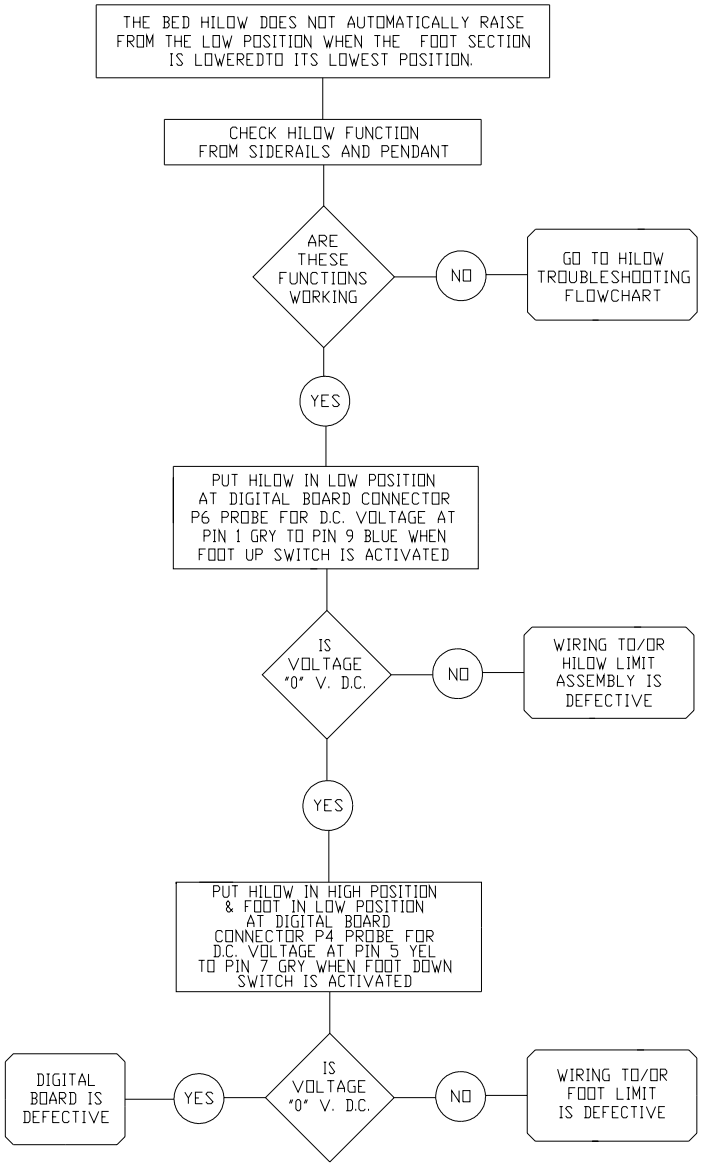
2

The hilow does not stop at the intermediate stop (prior to the low position) when the bed is in the Trendelenburg position.


HILOW DOES NOT STOP AT THE INTERMEDIATE STOP (PRIOR TO THE HILOW POSITION) WHEN THE BED IS IN THE TRENDELENBURG POSITION.
CHECK FOR PROPER ACTIVATION OF TREND GAS CYLINDER SWITCH
DOES SWITCH ENGAGE PROPERLY
NO
MAKE NECESSARY MECHANISM REPAIRS
YES
AT DIGITAL BOARD CONNECTOR J8 CHECK FOR CONTINUITY WHEN SWITCH IS ACTIVATED USING PIN 1 WHT & PIN 2 PINK
DOES SWITCH CLOSE
NO
WIRING TO/OR SWITCH AT GAS SPRING IS DEFECTIVE
YES
AT CONNECTOR P6 PROBE FOR D.C. VOLTAGE AT PIN 1 GRY TO PIN 8 GRN WHEN SWITCH IS ACTIVATED
IS VOLTAGE 5 V. D.C.
NO
WIRING TO/OR HILOW LIMIT IS DEFECTIVE
YES
DIGITAL BOARD IS DEFECTIVE

m013e076

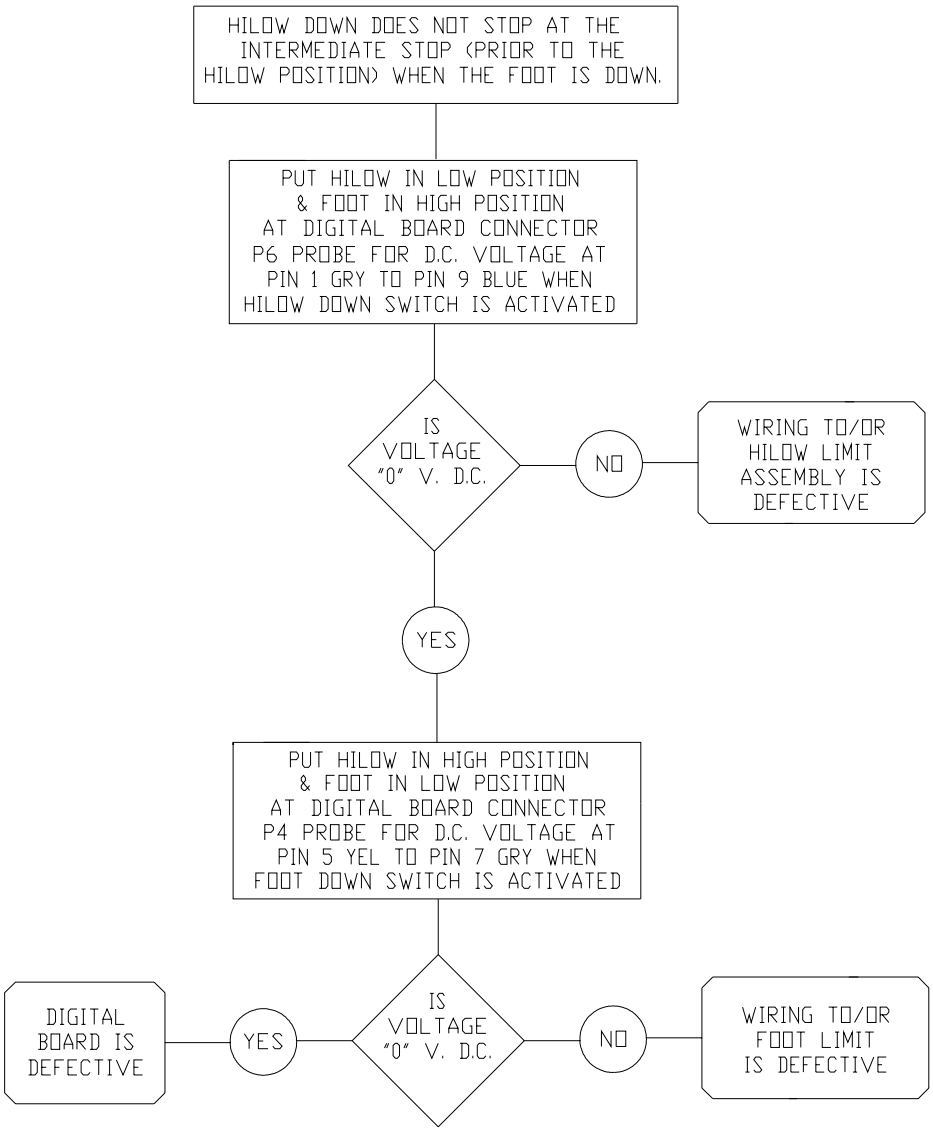
The hilow does not automatically raise from the low position when the foot section is lowered to its lowest position.


THE BED HILOW DOES NOT AUTOMATICALLY RAISE FROM THE LOW POSITION WHEN THE FOOT SECTION IS LOWEREDTO ITS LOWEST POSITION.
CHECK HILOW FUNCTION FROM SIDERAILS AND PENDANT
ARE THESE FUNCTIONS WORKING
NO
GO TO HILOW TROUBLESHOOTING FLOWCHART
YES
PUT HILOW IN LOW POSITION AT DIGITAL BOARD CONNECTOR P6 PROBE FOR D.C. VOLTAGE AT PIN 1 GRY TO PIN 9 BLUE WHEN FOOT UP SWITCH IS ACTIVATED
IS VOLTAGE "0" V. D.C.
NO
WIRING TO/OR HILOW LIMIT ASSEMBLY IS DEFECTIVE
YES
PUT HILOW IN HIGH POSITION & FOOT IN LOW POSITION AT DIGITAL BOARD CONNECTOR P4 PROBE FOR D.C. VOLTAGE AT PIN 5 YEL TO PIN 7 GRY WHEN FOOT DOWN SWITCH IS ACTIVATED
IS VOLTAGE "0" V. D.C.
YES
DIGITAL BOARD IS DEFECTIVE
NO
WIRING TO/OR FOOT LIMIT IS DEFECTIVE

m013e077

2

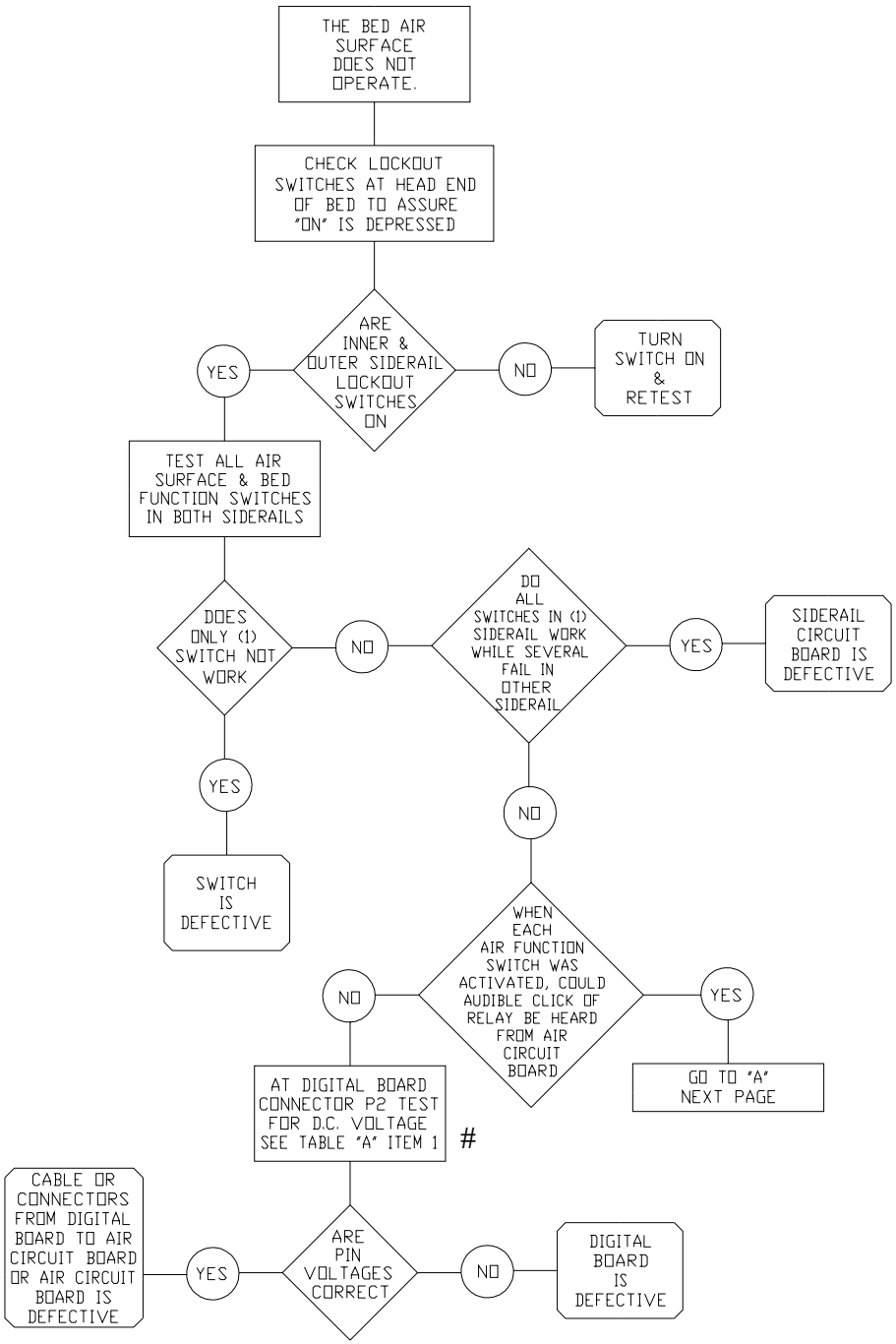
The hilow does not stop at the intermediate stop (prior to the low position) when the foot section is down.


HILOW DOWN DOES NOT STOP AT THE INTERMEDIATE STOP (PRIOR TO THE HILOW POSITION) WHEN THE FOOT IS DOWN.
PUT HILOW IN LOW POSITION & FOOT IN HIGH POSITION AT DIGITAL BOARD CONNECTOR P6 PROBE FOR D.C. VOLTAGE AT PIN 1 GRY TO PIN 9 BLUE WHEN HILOW DOWN SWITCH IS ACTIVATED
IS VOLTAGE "0" V. D.C.
NO
WIRING TO/OR HILOW LIMIT ASSEMBLY IS DEFECTIVE
YES
PUT HILOW IN HIGH POSITION & FOOT IN LOW POSITION AT DIGITAL BOARD CONNECTOR P4 PROBE FOR D.C. VOLTAGE AT PIN 5 YEL TO PIN 7 GRY WHEN FOOT DOWN SWITCH IS ACTIVATED
IS VOLTAGE "0" V. D.C.
YES
DIGITAL BOARD IS DEFECTIVE
NO
WIRING TO/OR FOOT LIMIT IS DEFECTIVE

m013e078

2

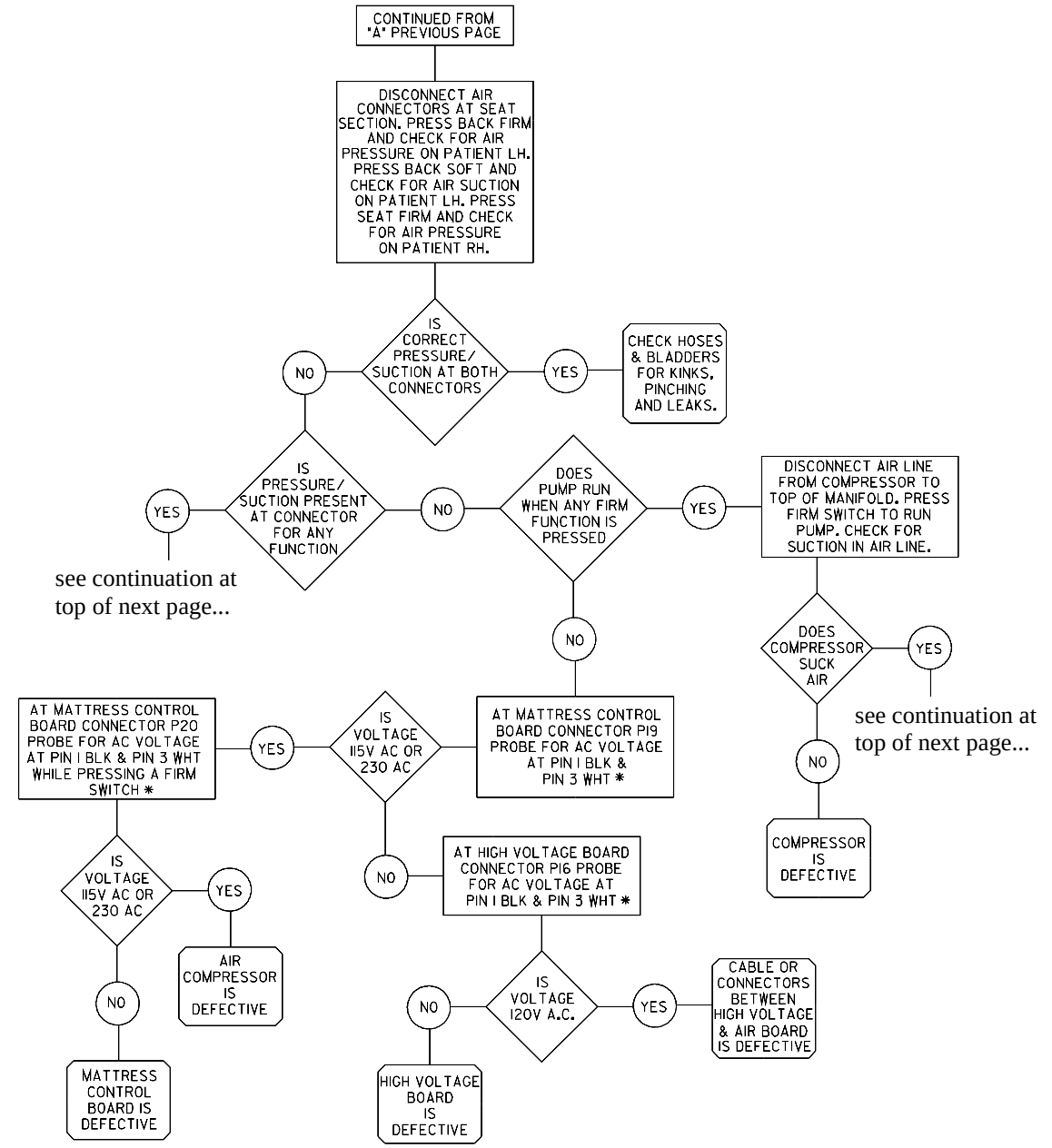
The bed air surface does not work.


THE BED AIR SURFACE DOES NOT OPERATE.
CHECK LOCKOUT SWITCHES AT HEAD END OF BED TO ASSURE "ON" IS DEPRESSED
ARE INNER & OUTER SIDERAIL LOCKOUT SWITCHES ON
YES
NO
TURN SWITCH ON & RETEST
TEST ALL AIR SURFACE & BED FUNCTION SWITCHES IN BOTH SIDERAILS
DOES ONLY (1) SWITCH NOT WORK
NO
DO ALL SWITCHES IN (1) SIDERAIL WORK WHILE SEVERAL FAIL IN OTHER SIDERAIL
YES
SIDERAIL CIRCUIT BOARD IS DEFECTIVE
YES
SWITCH IS DEFECTIVE
NO
WHEN EACH AIR FUNCTION SWITCH WAS ACTIVATED, COULD AUDIBLE CLICK OF RELAY BE HEARD FROM AIR CIRCUIT BOARD
NO
YES
GO TO "A" NEXT PAGE
AT DIGITAL BOARD CONNECTOR P2 TEST FOR D.C. VOLTAGE SEE TABLE "A" ITEM 1 #
CABLE OR CONNECTORS FROM DIGITAL BOARD TO AIR CIRCUIT BOARD OR AIR CIRCUIT BOARD IS DEFECTIVE
YES
ARE PIN VOLTAGES CORRECT
NO
DIGITAL BOARD IS DEFECTIVE

m013e079

#NOTE: See "I/O Signal Reference" on page 2-64.

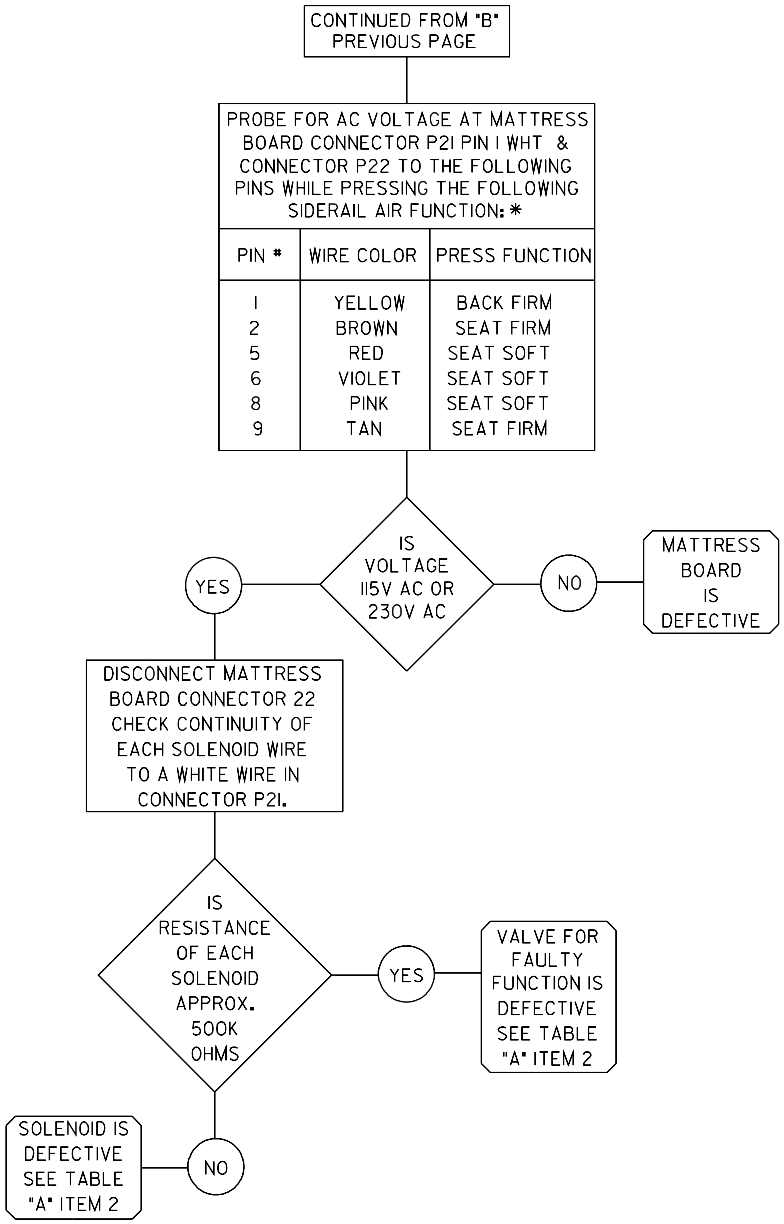
2


CONTINUED FROM "A" PREVIOUS PAGE
DISCONNECT AIR CONNECTORS AT SEAT SECTION. PRESS BACK FIRM AND CHECK FOR AIR PRESSURE ON PATIENT LH. PRESS BACK SOFT AND CHECK FOR AIR SUCTION ON PATIENT LH. PRESS SEAT FIRM AND CHECK FOR AIR PRESSURE ON PATIENT RH.
IS CORRECT PRESSURE/ SUCTION AT BOTH CONNECTORS
NO
YES
CHECK HOSES & BLADDERS FOR KINKS, PINCHING AND LEAKS.
IS PRESSURE/ SUCTION PRESENT AT CONNECTOR FOR ANY FUNCTION
YES
see continuation at top of next page...
NO
DOES PUMP RUN WHEN ANY FIRM FUNCTION IS PRESSED
YES
DISCONNECT AIR LINE FROM COMPRESSOR TO TOP OF MANIFOLD. PRESS FIRM SWITCH TO RUN PUMP. CHECK FOR SUCTION IN AIR LINE.
DOES COMPRESSOR SUCK AIR
YES
see continuation at top of next page...
NO
COMPRESSOR IS DEFECTIVE
NO
AT MATTRESS CONTROL BOARD CONNECTOR P19 PROBE FOR AC VOLTAGE AT PIN 1 BLK & PIN 3 WHT *
IS VOLTAGE 115V AC OR 230 AC
YES
AT MATTRESS CONTROL BOARD CONNECTOR P20 PROBE FOR AC VOLTAGE AT PIN 1 BLK & PIN 3 WHT WHILE PRESSING A FIRM SWITCH *
IS VOLTAGE 115V AC OR 230 AC
YES
AIR COMPRESSOR IS DEFECTIVE
NO
MATTRESS CONTROL BOARD IS DEFECTIVE
NO
AT HIGH VOLTAGE BOARD CONNECTOR P16 PROBE FOR AC VOLTAGE AT PIN 1 BLK & PIN 3 WHT *
IS VOLTAGE 120V A.C.
YES
CABLE OR CONNECTORS BETWEEN HIGH VOLTAGE & AIR BOARD IS DEFECTIVE
NO
HIGH VOLTAGE BOARD IS DEFECTIVE

m013e080

@NOTE: 120V AC if domestic, 230V AC if European.
***NOTE**: For high voltage checks do not unplug connectors.

2


CONTINUED FROM "B" PREVIOUS PAGE
PROBE FOR AC VOLTAGE AT MATTRESS BOARD CONNECTOR P21 PIN 1 WHT & CONNECTOR P22 TO THE FOLLOWING PINS WHILE PRESSING THE FOLLOWING SIDERAIL AIR FUNCTION: *
PIN # | WIRE COLOR | PRESS FUNCTION
1 | YELLOW | BACK FIRM
2 | BROWN | SEAT FIRM
5 | RED | SEAT SOFT
6 | VIOLET | SEAT SOFT
8 | PINK | SEAT SOFT
9 | TAN | SEAT FIRM
IS VOLTAGE 115V AC OR 230V AC
YES
NO
MATTRESS BOARD IS DEFECTIVE
DISCONNECT MATTRESS BOARD CONNECTOR 22 CHECK CONTINUITY OF EACH SOLENOID WIRE TO A WHITE WIRE IN CONNECTOR P21.
IS RESISTANCE OF EACH SOLENOID APPROX. 500K OHMS
YES
VALVE FOR FAULTY FUNCTION IS DEFECTIVE SEE TABLE "A" ITEM 2
SOLENOID IS DEFECTIVE SEE TABLE "A" ITEM 2
NO

m013e081

@NOTE: 120V AC if domestic, 230V AC if European.

#NOTE: See "I/O Signal Reference" on page 2-64.

***NOTE**: For high voltage checks do not unplug connectors.

NOTES:

Chapter 3
Theory of Operation

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Main Wiring Diagram—Six Station Manifold P/N 40834

Figure 3-1. Main Wiring Diagram—Six Station Manifold P/N 40834

Refer to fold-out FO3-1 at the rear of this manual.

Main Wiring Diagram—Three Station Manifold P/N 46985

Figure 3-2. Main Wiring Diagram—Three Station Manifold P/N 46985

Refer to fold-out FO3-2 at the rear of this manual.

Wiring Diagram—Bed Drive and Rectifier P/N 40843-02

Figure 3-3. Wiring Diagram—Bed Drive and Rectifier P/N 40843-02

Refer to fold-out FO3-3 at the rear of this manual.

Wiring Diagram—Right Hand Siderail P/N 4083701

Figure 3-4. Wiring Diagram—Right Hand Siderail P/N 4083701

Refer to fold-out FO3-4 at the rear of this manual.

Wiring Diagram—Left Hand Siderail P/N 4084001

Figure 3-5. Wiring Diagram—Left Hand Siderail P/N 4084001

Refer to fold-out FO3-5 at the rear of this manual.

Wiring Diagram—Mattress Drive P/N 41188

Figure 3-6. Wiring Diagram—Mattress Drive P/N 41188

Refer to fold-out FO3-6 at the rear of this manual.

Theory of Operation

AC power (120V, or 230V AC) enters the bed via a UL hospital grade plug and UL AWM power cord. Earth ground (EGD) to the bed frame and metal enclosures is also provided via the power cord. Both phase (120V AC) and neutral lines are protected by UL recognized fuses.

Input power lines (phase and neutral) next pass through a UL recognized electrical transient noise filter.

Bed Drive and Rectifier Circuit Board Assembly—P/N 40843-02

1. AC power next enters this board.

2. On this board is located the low voltage power supply for the entire bed electrical system.

3. The step down transformer (UL recognized) used for low voltage power production is protected from secondary short circuit and over current overheating by a fuse (UL recognized) in the primary input line to the transformer.

4. There are two transformer secondaries. One secondary AC voltage generated is rectified, filtered, and regulated to generate the +5V DC and +12V DC supply voltages used throughout the low voltage bed electrical system. Both the +5 and +12V DC supplies are protected from over current faults by PTC (positive temperature coefficient) resistive components.

5. The +5V DC supply is used for all low voltage logic electrical needs throughout the bed. The +12V DC voltage supply is used to supply energy for all electrical relays.

6. The other transformer secondary provides unregulated low AC voltage to power a night light. This voltage is energy limited by a series PTC and 10 watt resistor. The night light is rated 0.59 amps at 13.5 volts and is mounted underneath the bed. A wiring connection is provided for the night light via header P14 on the circuit board.

7. Also located on the board is the interface circuitry between low voltage control signals and high voltage (120V AC) output supplies for the bed articulation motors. These 120V AC bi-directional induction motors control bed hilow, foot and head movements requiring six separate high voltage outputs.

8. This interface consists of logic high (+5V DC) signals applied to appropriate pins on header P13. These logic high signals are provided by the digital control board. These signals turn the appropriate outputs of the peripheral driver array ON (output goes low).

9. While ON, the driver array output provides the sinking current source for the 12V DC relay coil. This energizes the relay coil, which in turn causes the relay contacts to close.

10. There are six dedicated relays serving each of the bed articulation functions (see table 3-1 on page 3-10).

Table 3-1. Relay Description

Relay	Abbreviated	Function	Relay	Abbreviated	Function
K1	BMU	Bed motor up	K6	FMD	Foot motor down
K8	BMD	Bed motor down	K3	HMU	Head motor up
K5	FMU	Foot motor up	K4	HMD	Head motor down

These relays provide 120V AC to their respective motor output pins on header P17, provided that relay K2, SUPER, is also energized.

11. SUPER is a supervisory relay which must be turned on by a separate logic signal to P13. SUPER is activated the same as that of previously described bed articulation relays. SUPER relay contacts provide 120V AC to the common terminals of the bed function relays. For 120V AC to appear at any motor output pin on P17, both the SUPER and bed function relay must be turned ON.

12. For all six motor relays, a resistor/capacitor Snubber network is provided across the contacts.

13. The relay contacts are rated 10 amp at 250V AC, 10 amp at 30V DC, and are UL recognized.

14. Night light voltage is supplied to connector P14 with the same interface circuitry. A logic high on the NTLIT pin of P13 will turn the NTLIT peripheral driver array ON, which in turn will activate the NTLIT relay K1, supplying unregulated low AC voltage for the night light, via P14.

15. UL 544, medical and dental equipment, creepage, and clearance distances between high voltage and ground, and low voltage is observed.

16. Also on this board is header P16, which provides a high voltage connection for the mattress drive board.

Digital Board Assembly—P/N 46985-01

1. This board is designed to operate in both the original bed with the six station manifold, jumper JU1 in the position “A”, and the new bed with the three station manifold, using the JU1 position “B”.
   This board serves as the control logic center for all bed electronics. All logic control is achieved by discrete CMOS logic integrated circuits and passive components, except for the night light and back light circuit, which utilize OP amp comparators for ambient room light detection circuitry.

2. The digital board receives its +5V DC supply on P1 via P13 on the bed drive and rectifier board.

3. Functioning of the digital board can be summed up as follows:

Demux Circuit for SideCom, Bed, and Mattress Functions

The shift registers here convert a 32 bit serial DATA message from the Filter/MUX Ckt blocks of the RH and LH siderail boards to 32 parallel messages, when the SHLD signal from the Clock. block goes low.

DATA is made up of bits, logic highs, and lows (+5V DC or 0V DC). The 32 bits are clocked in one at a time with each clock pulse, CLK, from the Clock... block. Each CLK pulse has a period of approximately 160 microseconds.

Data bits represent individual switch activations occurring in the siderails of the bed. For inboard siderail functions see table 3-2 on page 3-12. For outboard siderail functions see table 3-3 on page 3-12.

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Table 3-2. Inboard Siderail Functions

Inboard	Abbreviation	Function Type
Head up	HU	Bed
Head down	HD	Bed
Foot up	FU	Bed
Foot down	FD	Bed
Seat firm (inflate)	SF	Mattress
Seat soft (deflate)	SS	Mattress
Back firm (inflate)	BF	Mattress
Back soft (deflate)	BS	Mattress
Radio		SideCom
Indirect light, left or right		SideCom
Direct light, left or right		SideCom
TV		SideCom

Table 3-3. Outboard Siderail Functions

Outboard	Abbreviation	Function Type
Head up	HU	Bed
Head down	HD	Bed
Foot up	FU	Bed
Foot down	FD	Bed
Bed up	BU	Bed
Bed down	BD	Bed
Seat firm	SF	Mattress
Seat soft	SS	Mattress
Back firm	BF	Mattress
Back soft	BS	Mattress
Auto inflate seat	AI	Mattress

Once all 32 bits are clocked in, the SHLD line goes high. The DATA message is locked in (loaded) to flip-flop outputs and ready to be interpreted by other logic blocks; buffers to SideCom, bed... combination and mattress...logic.

Inboard and outboard enable signals from the lockouts switch panel will disable (logic low) or enable (logic high) both mattress and bed functions from the Demux... block.

The Demux... block also receives a power up reset signal from the reset block. This signal resets the SideCom functions at power up. Bed and mattress functions do not require a power up reset here since built in delays occur in other logic blocks.

Clock for MUX/DeMUX

Clocks (2) for the DeMUX... and Filter/MUX Ckt are produced here.

- Clock (CLK), clock signal for transferring individual data bits, has a period of approximately 160 microseconds.
- Shift/Load, signals shift registers and flip-flops to latch in or send data, has a period of approximately 80 milliseconds, 5 milliseconds low, and 75 milliseconds high.

Night Light and Back Light Circuit

Ambient room light at the light sensor resistor connected to P11 is converted into an analog voltage (PHRES) and compared to voltages set by a resistor tree. Two OP amp comparators are used to compare this voltage to preset voltage levels. A voltage level of 0.85V DC, or below, will activate the night light (NLIT) signal to P1. A voltage level of 1.70V DC, or below, will activate the back light signals (VBR and VBL) to P12 and P3.

Both the night light (NLIT) and back light (VBR and VBL) signals can be disabled (logic low) at this block by a lockout signal from the lockout filter/buffer ckt.

Lockouts Filter Buffer Circuit

This circuitry takes its inputs from the three lockout switches named; inside (inboard), outside (outboard), and night light.

There is circuitry for an extra lockout switch for the back light signal, but the input is tied high by external wiring. This will allow uninterrupted functioning of the back light function.

The circuitry is for input protection that consists of RC and Schmidt trigger buffer circuits with static protection.

Lockout inboard (LOINB) and outboard (LOOUT) output signals go to the DeMUX...functions block.

Lockout night light and back light signals go to the night light...ckt block.

Power Up Reset

Power up reset is the RC circuitry that sends power up signals to the mattress control logic (RESET) and DeMUX...functions (/RESET) blocks.

Mattress Control Logic

Logic circuitry which takes a mattress function command from the DeMUX...functions block and converts it to low voltage control signals for the mattress drive board. Signal transfer occurs from P2 on this board to P18 on the mattress drive board.

Six Station Manifold

See table 3-4 on page 3-14 for the six station manifold input commands and mattress functions.

NOTE:
The six station manifold is used on the air package (old style) which activates the air compressor during the mattress deflate function.

Table 3-4. Six Station Manifold

Input Command: Mattress Function											
Output Signal	**Pin No.**	**Wire Color**	**SF**	**SS**	**BF**	**BS**	**AI**	**BF/SF**	**BS/SS**	**BF/SS**	**BS/SF**
Pump	11	GRN	X		X		X	X			
Lum	7	BLU		X		X			X		
Seat	8	VIO	X	X			X	X	X		
EXH1/V	9	RED		X		X			X		
EXH2/P	10	YEL	X	X	X		X	X	X		
Super-visory	12	ORG	X	X	X	X	X	X	X		
X= ON= 5V DC (approximately)											
Legend:											
SF= Seat firm SS= Seat soft BF= Back firm BS= Back soft AI= Auto inflate											

Three Station Manifold

See table 3-5 on page 3-15 for the three station manifold input commands and mattress functions.

NOTE:
The three station manifold is used on the air package (new style) in which the mattress deflate function is gravity bled.

Table 3-5. Three Station Manifold

Input Command: Mattress Function											
Output Signal	**Pin No.**	**Wire Color**	**SF**	**SS**	**BF**	**BS**	**AI**	**BF/SF**	**BS/SS**	**BF/SS**	**BS/SF**
Pump	11	GRN	X		X	X	X	X			
Lum	7	BLU			X	X		X	X		
Seat	8	VIO	X	X			X	X	X		
In/out	9	RED		X		X			X		
Super-visory	12	ORG	X	X	X	X	X	X	X		
X= ON= 5V DC (approximately)											
Legend:											
SF= Seat firm SS= Seat soft BF= Back firm BS= Back soft AI= Auto inflate											

SUPERVISORY comes on with any legitimate command. A legitimate command is any which does not combine a firm or soft simultaneously. SUPERVISORY is backup protection in case an output on the mattress board fails on.

Auto-lnflate seat (Al) circuitry is also part of this block. Al is a timed 25 second (approximate) run of the seat firm (SF) function requiring only a momentary closure of a switch in the siderail controls. Al can be cancelled in its cycle by another momentary closure of the Al switch.

RESET signal to this block prevents Al from occurring during a power up of the bed.

Buffers to SideCom

Buffers SideCom functions out of the DeMUX... functions block from the output pins of P7 (see table 3-6 on page 3-16).

Table 3-6. SideCom Functions

TV	(CN)
Radio (control)	Left
Radio (control)	Right
Radio selector	(Combination of radio r and l)
Direct light	Left
Direct light	Right
Indirect light	Left
Indirect light	Right

Pendant Control Filter Buffer Circuit

This circuitry takes its inputs from the pendant control connection P9. The pendant controls bed inputs only: BU, BD, FU, FD, HU, and HD.

The circuitry is for input protection and consists of RC and Schmidt trigger buffer circuits with static protection.

The outputs from this block go to the bed... function input combination block.

Bed Function Input Combination Block

This block combines the bed functions from the DeMUX...functions and pendant filter buffer ckt blocks outputs from this block are as follows:

- HU, HD, BU, and FU signals go to the bed control block.
- BD signal goes to the bed down limit w/Trendelenburg block.
- FD signals go to both the foot down pause and auto bed up run, and to the limit foot level pause and pause cancel blocks.
- FU also goes to the limit foot level pause and pause cancel block.

The following blocks are combined under one explanation for ease of understanding. They all deal with bed function limits.

- Foot down pause and auto bed up run
- Bed down limit w/Trendelenburg
- Auto bed up w/Trendelenburg
- Limit foot level pause and pause cancel

The following is a list of labels used (see table 3-7 on page 3-17).

Table 3-7. Labels

Hi-lo Limit Stops (via P6)		Head Limit Stops (via P5)	
LBU/	Limit bed up	LHU/	Limit head up
LBD2/	Limit bed down 2	LHD/	Limit head down
TLBD2	Trendelenburg limit bed down 2		
TLBD1	Trendelenburg limit bed down 1		
LBD1/	Limit bed down 1		

Foot Limit Stops (via P4)		Trendelenburg Mechanism Switches (via P8)	
LFU/	Limit foot up	TS	Trendelenburg spring indicates bed is in Trendelenburg
LFL/	Limit foot level	TH	Trendelenburg handle indicates Gatching of TH lever
LFD2/	Limit foot down 2		
LFD1/	Limit foot down 1		

NOTE:
The limit foot level (LFL) is not a function on the new style bed.

NOTE:
Limit symbols ending in "/" indicate an active logic low state for that limit.

The following is an operating description of the bed limit stops:

LBU/, LHU/, LHD/, and LFU/ are straight forward.

LFD/ is achieved at:

LFD2/ If bed is at or below LBD2/, unless FD switch is continually activated or reactivated, the foot down motion then pauses for 0.5 seconds. Motion will then continue running down until LFD1/ is reached or FD switch is released. After the pause period, and in conjunction with FD switch activation, the bed will automatically run up as long as it is below LBD2/.

LFD1/ If bed is above LBD2/.

LFL limit foot level pause can be activated by either running foot down (FD) or foot up (FU) functions. LFL/ achieves leveling of the foot to other bed sleep surfaces, when the head and seat sections are flat. A temporary pause of FU or FD will occur at this point for one second. However, if the foot section is resting at, or near, LFU and FD, or FU is activated, there will not be a pause period/pause cancel.

NOTE:
Newer style beds have the foot pause function removed.

LBD/ is achieved at:

LBD2/ If the foot section is at or below LFD2/.

LBD1/ If the foot section is above LFD2/, this is full bed low position.

TLBD2 Provided the Trendelenburg signal TS is activated.

TLBD1 is an up point which the bed will automatically drive to when the bed is below this point and TH is activated. If TH is released, the auto-up function will stop. TH requires manual Gatching of the Trendelenburg handle lever (TH).

Outputs from this block go to the bed control block.

Bed Control

This block combines all bed function and limit signals. This block functions include:

- Combine limit signals with bed activation signals.
  - LFD/ cancels FD
  - LFU/ cancels FU
  - LHD/ cancels HD
  - LHU/ cancels HU
  - LBD/ cancels BD
  - LBU/ cancels BU
- Prohibits opposing signals from reaching outputs.
  - FD and FU together cancel out
  - HD and HU together cancel out
  - BD and BU together cancel out
- Provides output turn on delay to prevent rapid motor reversals, approximately 100 milliseconds added delay.
- Create supervisory signals:

  SUP Active low signal which is sent to bed opto (via P6) and foot opto (via P4) limits pkgs signaling them to turn ON. SUP is activated only when a bed function signal reaches this block. When SUP is high (inactive), the following limit signals will be in low state, which is **active** for LBU/, LBD2, LBD1/, and all foot limits, and is **inactive** for TLBD1 and TLBD2.

  SUPER Active high signal sent to bed drive and rectifier board via P1. SUPER comes on with any bed command or the TH command. SUPER is backup protection in case an output on the bed drive and rectifier board fails on.

- BU (BMU), BD (BMD), FU (FMU), FD (FMD), HU (HMU), and HD (HMD) commands are sent to the bed drive and rectifier board via P1.

The digital board also serves as a via for 12V DC supplies to the mattress board and SideCom w/relays.

The digital board also serves as a via for SideCom functions between the SideCom w/relays board and the RH and LH siderails.

Bed opto limit pkg-5 limits and foot opto limit pkg-4 limits blocks are not part of the digital board, but will be discussed here due to their logic function. These electro-mechanical packages (pkgs) are mounted on the bed and foot motor drive assemblies.

A plastic vane moves with the drive screw movements, in and out of the stationary pkgs (packages). Optical sensors are positioned relative to the bed and foot limit stops. Vane movements will block or unblock the individual optical IR LED emitters from their detector sensors. Pkg electronics will convert the electrical sensor outputs to CMOS digital signals corresponding to the limit positions. SUP is a supervisory signal (active low) coming from the bed function... block turning these pkgs ON.

Right or Left Siderail Block Diagram Scheme—P/N 40837-01 or P/N 40840-01

Only one siderail (S/R) system will be explained here because of similarities of the two.

1. S/R CTLS (LH or RH) circuit board assembly (note Pxx/Pyy references right/left header.) The functions are as follows:

Filter/MUX Circuit

This block first takes the inboard (via P36/P30) and outboard (via P35/P31) membrane switch inputs and filters them with RC circuits.

Secondly, the parallel data is loaded into parallel to serial shift registers when the SHLD signal is logic high. When the SHLD signal goes logic low, the data is locked in and shifted out on the DATA line, one bit at a time with each clock pulse received on the CLK (clock) line.

Each DATA transfer is a 32 bit message, and each data bit is a unique bed, mattress, or SideCom function.

DATA is transmitted to the DeMUX... block on the digital board via P32/27.

CLK and SHLD are received from the clock... block on the digital board via P32/27.

LED for back lighting the nurse call switch is on this board, signals B.L. (+) anode, and VBL (-) cathode come via P32/27.

Nurse call switch lines run from P32/27 to P34/29, and then off the board to a mechanical snap switch in the siderail.

Nurse call and nurse ANS LED signals run from P32/P27 to inboard membrane switch panels via P36/P30.

2. Other SideCom functions, which come from digital board via headers P12 or P3, but do not enter S/R Ctls circuit board assemblies, are the speaker control lines including:
   - Volume control lines (3)
   - Speaker lines (2)
   - Drain line (1)

SideCom W/Relays Circuit Board Assembly—P/N 40831-01

1. This serves as the bed's communications link to the hospital nurse call and SideCom systems. All SideCom function lines enter through this board on header P24. Functioning of this board can be summed up as follows:

This board provides the interface circuitry between those SideCom signals, which are energized by bed electronics (multiplexed from siderails), and their matching SideCom circuits energized external to the bed.

The interface circuitry is accomplished in a similar manner as that described for bed motor activations. This interface consists of logic high (+5V DC) signals applied to appropriate pins on header P23. These logic high signals are provided by the digital control board. These signals turn the appropriate outputs of the peripheral driver array ON (output goes low). While ON, the driver array output provides the sinking current source for the 12V DC relay coil. This energizes the relay coil, which in turn causes the relay contacts to close.
There are seven dedicated relays serving each of the SideCom functions, which were multiplexed and switched in this manner (see table 3-8 on page 3-21).

Table 3-8. Relays

Relay	Function	Relay	Function
K7	Indirect light left	K5	Direct light left
K2	Radio left	K6	Indirect light right
K3	Radio right	K1	TV CN
K4	Direct light right		

This board also serves as a via for SideCom functions, which are not switched by the bed electronics system, and the S/R Ctls boards by way of the digital board via P23 to P7 to P2 and P12.

Motor/Drive Theory of Operation

The hilow, head, and foot drives operate on 120 VAC is sent from the bed drive and rectifier circuit board to a motor's up or down motor winding. All three motors have the same electrical properties. To enhance the ease of troubleshooting, a motor's male connector can be connected to an adjacent motor's female connector. The switching of connectors assists you in determining whether a drive is either defective, binding, or if 120 VAC is not getting to the motor.

NOTE:
NOTE: The hilow motor is a higher capacity motor than the foot and head motors. Never mount a hilow motor where a foot or head motor mounts. Likewise, never place a foot or head motor in place of a hilow motor.

For example - a suspected defective hilow drive can be tested by cranking the hilow drive and head drive to their mid height position. Connect the adjacent head motor's female connector to the hilow motors male connector. Next, momentarily activate the head up and then activate the head down command in the siderail. If the hilow drive turns in both directions, the drive is good. If the hilow drive does not move, the drive is likely defective or jammed/binding.

Before 120 VAC is routed to a motor, two relays on the high voltage and bed drive rectifier circuit board must activate. The two relays can each be heard when they activate. The two relays are the supervisory relay "K2" and the respective motor function that is being activated i.e. - head up "K3", head down "K4", foot up "K5", foot down "K6", hilow up "K7", and hilow down "K8". K2 activates whenever a motor function is activated, therefore, if any motor function on the bed is working, then the K2 relay and associated circuit are OK.

Therefore, if one relay is heard activating and the motor does not work, and other motor functions on the bed are OK, the problem is probably located with a limit switch or associated wiring. The defective limit switch is typically the switch associated with function being activated. For example - if hilow down does not work, other bed functions operate, and only one relay is heard activating, the problem is likely to be with the hilow down switch and/or associated wiring.

The siderail, pendant control, and digital board make up the low voltage bed control circuits. If any relay sound is heard when a motor function is pressed in the siderail/pendant, the low voltage system is functional.

When two relay clicks are heard and the motor does not move, the problem is likely to be located between and including the respective motor and the Bed Drive & Rectifier circuit board.

This procedure must be conducted in a location that is relatively quiet. If the relay sounds described in this process can not be heard, the top motor cover can be removed.

For ease of explanation, a troubleshooting problem of “hilow not lowering” is used as the troubleshooting example throughout the procedure. For your particular problem, substitute your condition i.e. - head will not raise, foot will not lower, etc. anytime you read the statement “hilow will not lower”.

Either electrically or manually place the hilow to the mid height position, the head section flat, and foot section where the foot and seat mattresses are level.

If the hilow, foot, or head drives can not be manually cranked into position, the respective drive may be binding. Investigate the cause by performing a visual examination of the respective drive’s mechanical linkage. If necessary, call Hill-Rom technical support for further assistance.

Verify the problem is isolated to one function. For example - if the hilow is not lowering, do other motor functions operate? If so, the lockout switches are not activated. If other functions are not working, determine if the lockout circuit is the cause (lockout switches remove controls from inboard and outboard controls verses individual motor functions).

Activate the bed function that is defective. For example - Original problem is the Hilow will not lower and all other functions appear to be operational. After pressing the hilow down command, does the bed lower? If the bed does not lower, try the other siderail and/or pendant. If the bed lowers with another control, the problem is associated and located in the siderail or pendant that did not work.

NOTE:
Bed function commands originating in the left/right siderails and/or pendant are parallel circuits. In other words, if a function works from one rail and not the other, the problem is located in the rail in which the command is not working.

If the bed is still not lowering, determine how many relay clicks can be heard when the hilow down switch is being activated. If at least one click is heard, the low voltage controls from the siderail or pendant are operating correctly. If one click is heard, ensure that the function limit switch is not activated i.e. - hi-low down. If the function limit checks OK, the Bed drive and Rectifier circuit board or associated wiring is defective. If two clicks are heard, the 120VAC output from the Bed drive and Rectifier circuit board is not getting to the motor or the motor/drive is defective. Switching motor connectors with an adjacent motor and then operating that motor will determine whether the drive is defective or not.

Chapter 4
Removal, Replacement, and Adjustment Procedures

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NOTES:

4.1 Hilow Motor or System Drive Screw Assembly

Tools required:

1/4" allen wrench	(2) spiral pin
Punch	(2) roll pin
Phillips head screwdriver	Anti-seize compound
Hammer	Red Loctite #262
7/16" wrench	Blue Loctite #242
Torque wrench	1" wrench
9/16" wrench	

Bed stands, or (2) pieces of 2" x 4" x 32" lumber

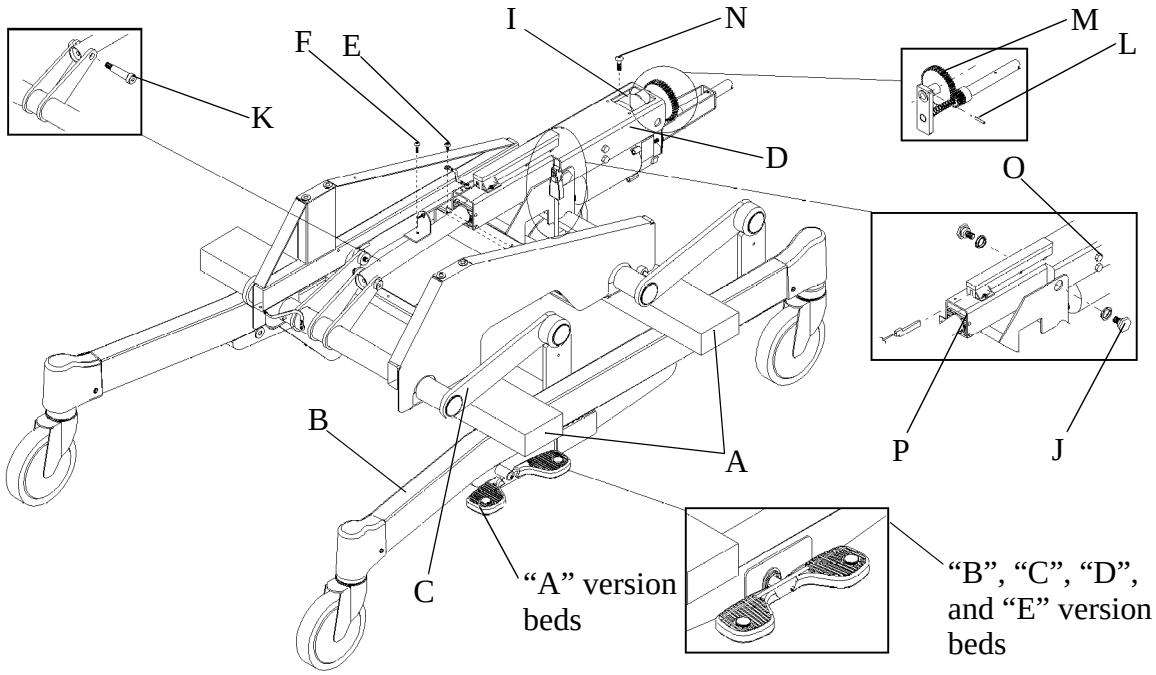
Removal

1. Set the brake/steer pedal to the brake position.
2. Raise the bed to the high position using the hilow function.
3. Raise the head section to the high position using the head function.

SHOCK HAZARD:
Unplug the unit from its power source. Failure to do so could result in personal injury or equipment damage.

4. Unplug the bed from its power source.
5. Using a phillips head screwdriver, remove the screws securing the top motor cover.
6. Remove the top motor cover from the bed.
7. Remove the bottom motor cover.
8. Position the two 2" x 4" x 32" pieces of lumber (A) across the base frame (B) beneath the lift arms (C) (see figure 4-1 on page 4-8).

Figure 4-1. Hilow Motor or System Drive Screw Assembly



9. Ensure the 4" flat side of the lumber (A) lays flat on the base frame (B).

10. Using the manual crank function, lower the bed until both lift arms (C) are resting on the 2 x 4s (A).

WARNING:
You must use the 2 x 4s to support the bed. The bed will fall during this procedure if not supported. Failure to do so could result in personal injury or equipment damage.

CAUTION:
Ensure the night light is not being damaged when the bed is being lowered.

11. Remove the screw holding the hilow limit cable clamp to the hilow pivot bracket assembly (D).

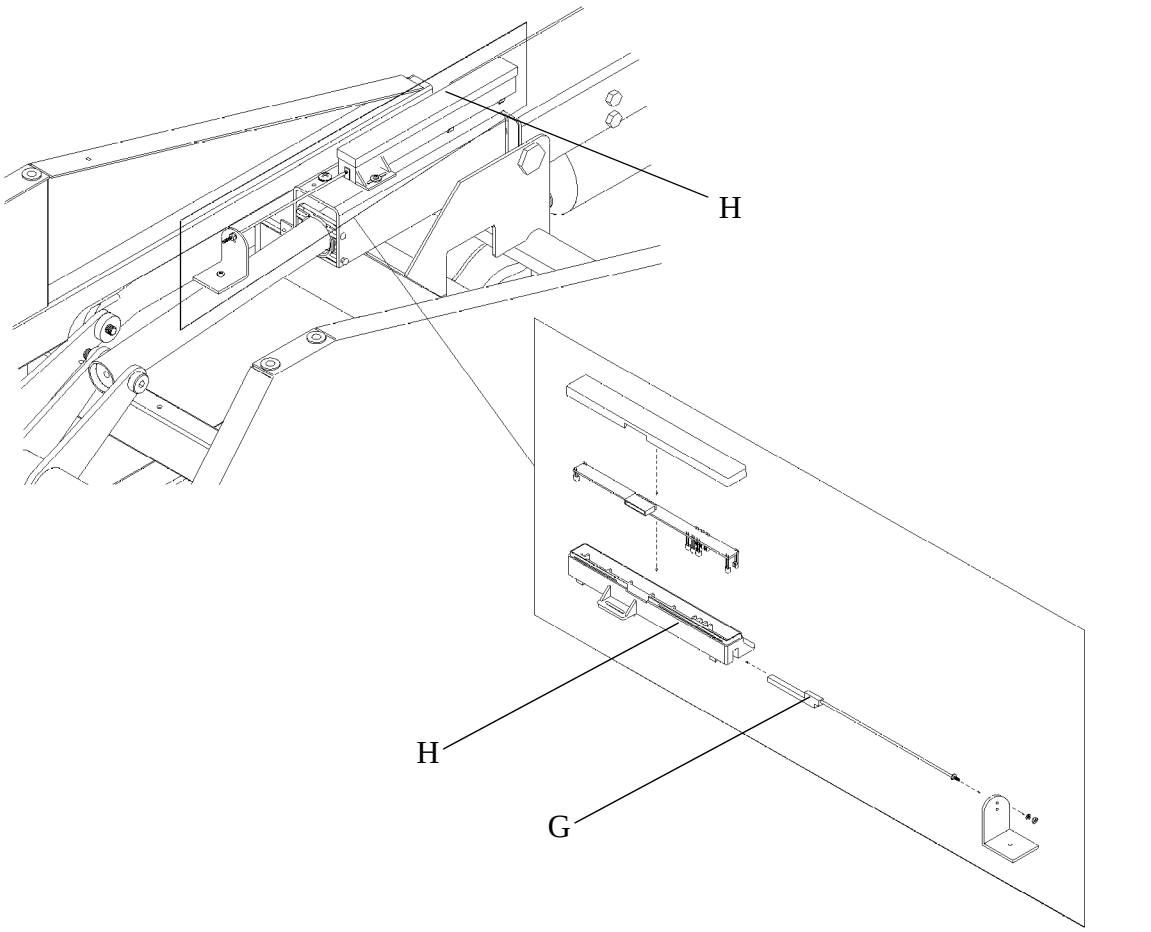
12. Disconnect the hilow limit switch cable connector from the hilow limit switch package.

13. Using a phillips head screwdriver, remove screw (E) which holds the ground strap from the drive channel to the frame.

14. Using a phillips head screwdriver, remove the screw (F) which connects the limit switch vane bracket to the hilow drive tube.

15. Pull the hilow vane (G) from the hilow limit switch assembly (H) and set it aside to prevent damage (see figure 4-2 on page 4-9).

Figure 4-2. Hilow Limit Switch Assembly



NOTE:
Observe the correct vane orientation as it is removed from the switch assembly.

16. Disconnect the power connector from the hilow motor (I).

17. Using a 1" speed wrench, support the hilow motor (I) and remove the two mounting shoulder bolts (J) that secure the hilow drive to the bed's base frame.

NOTE:
These bolts are easier to access from beneath the head end of the bed.

18. Using a 1/4" allen wrench, hold onto the hilow lift arm crank and remove the 1/4" allen head shoulder bolt (K) located on the end of the hilow drive screw assembly.

19. Remove the complete drive assembly from the bed.

20. Remove the drive from beneath the head end of the bed.

NOTE:
If you are replacing the complete hilow drive, including the motor assembly, proceed to step 1 under the section "Replacement" on page 4-10. For hilow motor servicing, continue to step 21.

21. Remove roll pin (L) and the 3" gear assembly (M) from the shaft at the head end of the hilow motor assembly.

22. Using a phillips head screwdriver, remove the screw (N) that connects the ground strap from the motor to the hilow pivot bracket assembly (D).

23. Remove the four pivot bracket bolts (O) that fasten the motor to the hilow pivot bracket assembly (D).

24. Remove the three keps nuts that attach the motor to the pivot bracket assembly.

25. Remove the four screws that attach the tube guide (P) to the pivot bracket assembly (D).

26. Pull on the hilow drive tube assembly to separate the drive screw from the motor coupling.

27. Lift the motor out of the pivot bracket assembly (D).

NOTE:
If hilow drive screw assembly is being replaced or is to be serviced, proceed to the section "Hilow Drive Screw Assembly" on page 4-12 for instructions.

Replacement

1. Reverse the removal procedure to install the replacement hilow drive assembly, **with attention to the following**:

a. When installing the four hilow pivot bracket bolts (O), apply blue Loctite #242 to the threads.

b. Tighten the bolts (O) to 72-88 in-lb torque.

c. Install a new roll pin (L) to secure the 3" gear assembly (M) to the shaft.

NOTE:
Apply gap-filling Loctite #609 to the motor shaft to reduce operation clearance which will prevent possible noise.

d. When installing shoulder bolt (K), apply anti-seize (P/N SA4269) to the shoulder diameters and red Loctite #262 to the bolt threads.

e. Tighten the bolt (K) to 285-315 in-lb torque.

f. When installing the two mounting shoulder bolts (J), apply red Loctite #262 to the threads.

g. Tighten the bolts (J) to 275-300 in-lb torque.

h. When installing the hilow vane (G) into the hilow limit switch assembly (H), ensure that it is oriented correctly and is installed in the correct mounting hole.

i. Ensure that the correct vane is being used.

j. Perform the adjustment procedures under section “Hilow Limit Switch” on page 4-29.

2. Ensure all hilow motor functions work properly.

4.2 Hilow Drive Screw Assembly

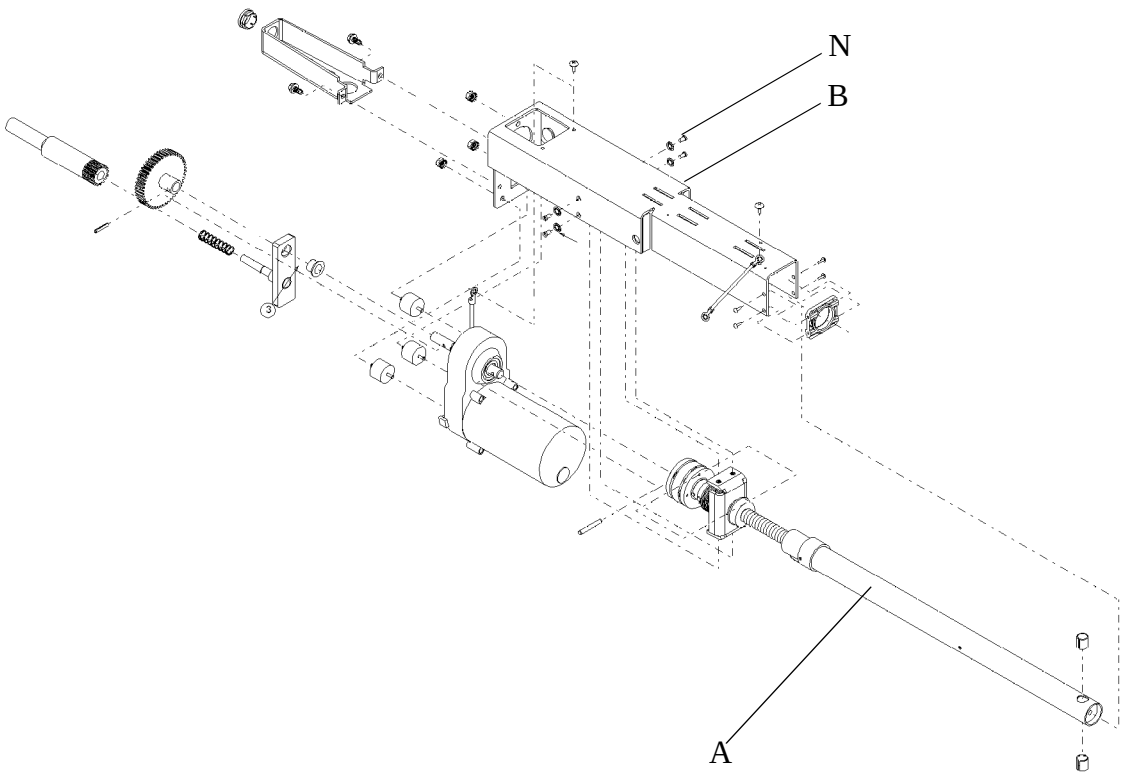
Tools required: (2) spiral pin
(2) roll pin
White grease
Oil
Lithium grease

Removal

1. Perform steps 1 through 20, 25, and 26. See “Hilow Motor or System Drive Screw Assembly” on page 4-7.

2. Lift the hilow drive tube assembly (A) (and drive screw) out of the pivot bracket assembly (B) (see figure 4-3 on page 4-12).

Figure 4-3. Hilow Drive Assembly



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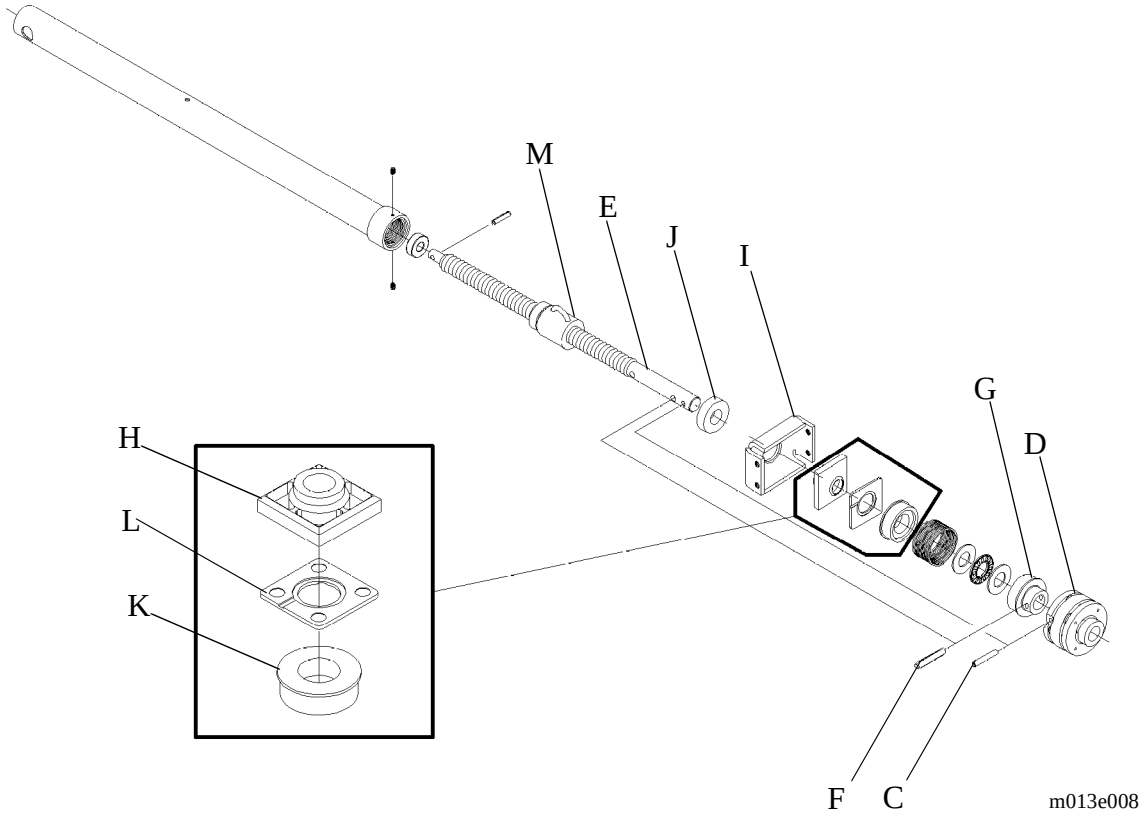
3. Using a suitable press, remove the 3/16" x 1 1/4" spiral pin (C) (see figure 4-4 on page 4-13).

Figure 4-4. Hilow Drive Screw Assembly



4. Carefully separate the coupling assembly (D) from the ball screw (E).

CAUTION:
Use a press to carefully remove pins **(C) and (F)**. This should prevent damage to the drive screw. Do not use a hammer and punch to remove these pins.

5. Carefully press the 1/4" x 1 1/2" roll pin (F) from the fixed brake block/drive screw (G).

6. Separate the brake parts, end bearing (H), bearing brace (I), foot spacer (J), and floating brake drum (K).

CAUTION:
Use care to prevent deforming the ball return tube on the ball screw nut assembly. Do not pry or clamp on the ball return tube. Also, do not rotate the ball screw nut too closely to the end of the threaded area of the screw.

Replacement

1. Reverse the removal procedure to install the replacement hilow drive screw **with attention to the following**:
    a. Using a dry, lint-free cloth, wipe clean all parts of the hilow drive screw assembly,.
    b. The bearing end (H), brake washer (L), and the floating brake drum (K) must be free of grease and metallic chips on the braking surface.
    c. Wipe the surface of the floating brake drum with alcohol before assembly.
    d. Ensure the brake washer (L) is oriented correctly towards the bearing end (H).

NOTE:
The smooth side should be facing the brake drum.

    e. Apply one drop of **SAE 30 non-detergent motor oil** to each of the **four corners** of the brake washer (L). (This should be applied to the side that comes into contact with the floating brake drum.)

NOTE:
Use only the oil specified and only in the quantities specified. Do not apply oil to any other area.

    f. Lubricate the drive screw as described under section “Hilow, Foot, and Head Drive Screw Inspection and Lubrication” on page 6-8.
    g. Assemble the coupling assembly (D) so that the pins that secure it to the ball screw (E) enter into the boss side of the coupling assembly.
    h. Use a press to install new pins (C) and (F).

NOTE:
Do not insert the pins into the old recesses left by the pins that were removed.

    i. Ensure the ball screw nut (M) and tube spin freely while holding the bearing brace stationary.

2. Replace the hilow drive screw to the hilow drive as follows:
    a. Insert the coupling assembly (D) into the matching coupling on the motor output shaft.
    b. Install four screws through the pivot bracket assembly and into the tube guide.
    a. When installing the four hilow pivot bracket bolts (N), apply blue Loctite #242 to the threads.
    b. Tighten the bolts (N) to 72-88 in-lb torque.

4.3 Head Drive Assembly

Tools required:
1/4" allen wrench
Blue Loctite #242
Phillips head screwdriver
Red Loctite #262
7/16" wrench
Anti-seize compound
Wire cutter
1/2" x 36" head section support rod
Bed stands, or (2) pieces of 2" x 4" x 32" lumber

Removal

1. Set the brake/steer pedal to the brake position.
2. Raise the bed to the high position using the hilow function.
3. Raise the head section to the high position using the head function.

SHOCK HAZARD:
Unplug the unit from its power source. Failure to do so could result in personal injury or equipment damage.

4. Unplug the bed from its power source.
5. Using a phillips head screwdriver, remove the screws securing the top motor cover.
6. Remove the top motor cover from the bed.
7. Remove the bottom motor cover.
8. Perform steps 8 through 10 under the section “Hilow Motor or System Drive Screw Assembly” on page 4-7.

WARNING:
You must use the 2 x 4s to support the bed. The bed will fall during this procedure if not supported. Failure to do so could result in personal injury or equipment damage.

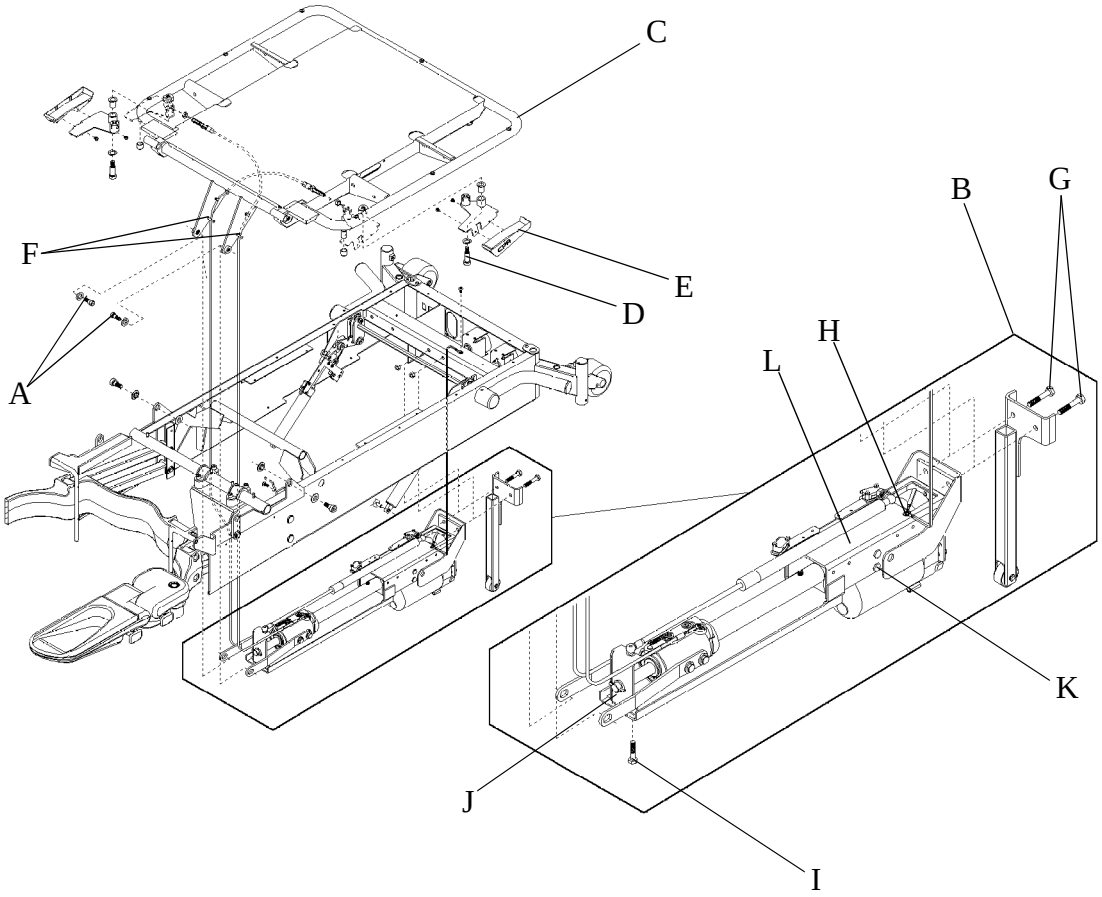
CAUTION:
Be sure that the night light is not being damaged when the bed is being lowered.

9. Pull the CPR release handle to lower the head section.

10. Remove the foot section from the bed and set it aside.

11. Using an allen wrench, from beneath the bed (at the foot end), remove the two Allen head shoulder bolts (A) that connect the head drive screw assembly (B) to the yoke on the head section frame (C) (see figure 4-5 on page 4-18).

Figure 4-5. Head Drive Assembly



12. Manually lift the head section (C) frame upward and prop it up (support it).

13. Using an allen wrench, remove the allen head shoulder screws (D) that hold the two CPR release handles (E) to the head section (C).

14. Remove the cable ball end from the CPR release handles.

15. Remove the two hex nuts that secure the cable jacket connectors to the bed frame.

16. Using a phillips head screwdriver, remove the two screws from the cable clamps (F) that hold the release cable assemblies to the yoke on the head section.

NOTE:
Note the orientation of the CPR cables. Ensure the CPR cables are oriented correctly during the replacement procedure.

17. Using a phillips head screwdriver, remove the screws from the cover over the digital control board enclosure.

18. Remove the cover

19. Disconnect the head limit cable connector from the circuit board.

20. Remove the cable tie that fastens this cable to the enclosure.

21. Unplug the head motor's power connector.

22. Remove the screw that connects the ground strap to the bed frame.

23. Remove the two nuts and bolts (G) that connect the head motor assembly to the bed frame.

24. Remove the complete head drive assembly from underneath the head end of the bed.

25. Using a phillips head screwdriver, remove screw (H) that connects the ground strap from the motor to the mounting bracket assembly (L).

26. Remove the keps nuts that attach the motor to the mounting bracket.

27. Remove the four mounting bracket bolts (K) that fasten the motor to the drive assembly.

28. Remove the four screws that attach the tube guide to the mounting bracket.

NOTE:
If head drive screw assembly is being replaced or serviced, follow the procedures outlined in the section "Head Drive Screw Assembly" on page 4-21.

29. Remove the nut and bolt (I).

30. Remove the end bracket assembly (J).

31. Separate the drive screw coupling from the motor coupling.

Replacement

1. Reverse the removal procedure to install the replacement head drive motor and its drive screw assembly, **with attention to the following**:
   a. Apply blue Loctite #242 to the threads on the four mounting bracket bolts (K).
   b. Tighten the four mounting bracket bolts (K) to 72-88 in-lb torque.
   c. Apply blue Loctite #262 to the threads on the two mounting bracket bolts (A).
   d. Tighten two mounting bracket bolts (A) to 150-190 in-lb torque.
   e. Ensure that all cable ties, clamps (F), and ground straps are properly installed.

CAUTION:
Ensure that the CPR cabling (F) that attaches to the head section is secured to the inside of the head section.

   f. Ensure that the head section travel is correct. See “Head Limit Switches” on page 4-40.

2. Ensure that all head drive functions work properly.

4.4 Head Drive Screw Assembly

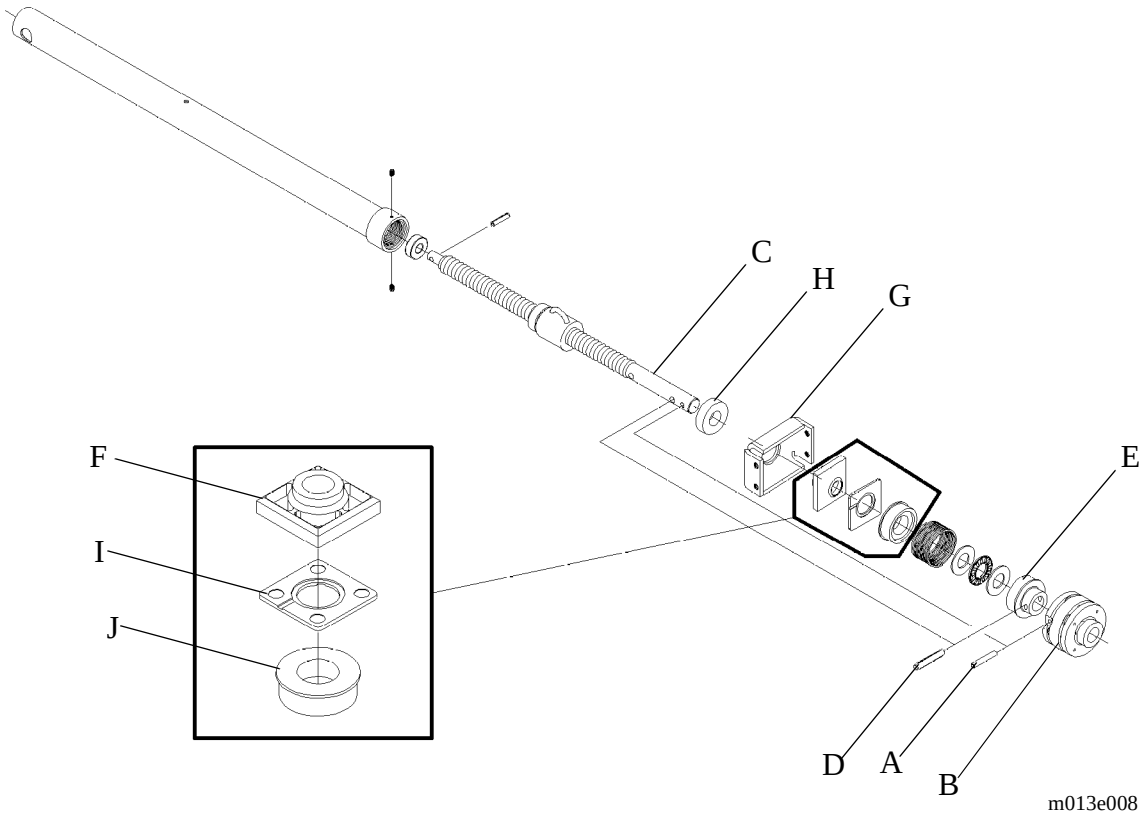
Tools required: Lithium grease
Oil
(1) spiral pin
(2) roll pin
Bed stands, or (2) pieces of 2" x 4" x 32" lumber

Removal

1. Perform steps 1 through 31 in the section “Head Drive Assembly” on page 4-16.

2. Using a suitable press, remove the spiral pin (A) (see figure 4-6 on page 4-21).

Figure 4-6. Head Drive Screw Assembly



3. Carefully separate the coupling assembly (B) from the ball screw (C).

CAUTION:
Use a suitable press to remove the spiral and roll pins. Do not use a hammer and punch to remove these pins. Equipment damage could occur.

4. Using a press, carefully press out the roll pin (D) and remove it from the fixed brake block (E).

5. Separate the brake parts, bearing end (F), bearing brace (G), and foot spacer (H).

NOTE:
Do not disassemble the CPR bearing housing.

6. Separate the brake assembly parts.

Replacement

1. Reverse the removal procedure to install the replacement head drive screw assembly, **with attention to the following**:
   a. Using a dry, lint-free cloth, clean all parts of the drive screw assembly.
   b. Ensure the bearing end (F), brake washer (I), and the floating brake drum (J) are free of grease, metallic chips, and oil on the braking surface.
   c. Wipe the surface of the floating brake drum (J) with alcohol before assembly.
   d. The brake washer (I) must be oriented towards the bearing end (F).
   e. Lubricate the drive screw as described under section “Hilow, Foot, and Head Drive Screw Inspection and Lubrication” on page 6-8.
   f. Assemble the coupling assembly (B) so that the pins that secure it to the ball screw enter into the boss side of the coupling assembly.
   g. Using a press, install the new pins (A) and (D).
   h. Do not insert the pins into the recesses left by the previous pins.

2. Ensure all head drive functions work properly.

4.5 Foot Drive Assembly

Tools required:

1/4" allen wrench	Blue Loctite #242
Phillips head screwdriver	Red Loctite #262
7/16" wrench	Anti-seize compound

Bed stands, or (2) pieces of 2" x 4" x 32" lumber

Removal

1. Set the brake/steer pedal to the brake position.
2. Raise the bed to the high position using the hilow function.
3. Raise the head section to the high position using the head function.

SHOCK HAZARD:
Unplug the unit from its power source. Failure to do so could result in personal injury or equipment damage.

4. Unplug the bed from its power source.
5. Using a phillips head screwdriver, remove the screws securing the top motor cover.
6. Remove the top motor cover from the bed.
7. Remove the bottom motor cover.
8. Perform steps 8 through 10 under the section “Hilow Motor or System Drive Screw Assembly” on page 4-7.

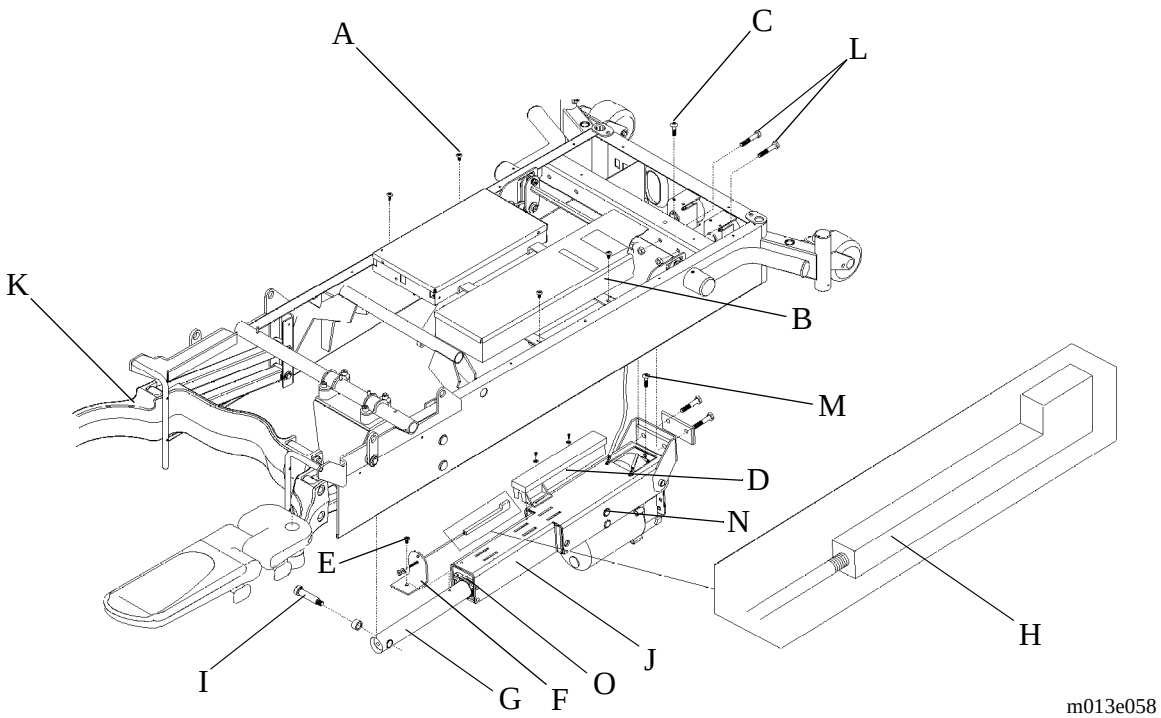
WARNING:
You must use the 2 x 4s to support the bed. The bed will fall during this procedure if not supported. Failure to do so could result in personal injury or equipment damage.

CAUTION:
Be sure that the night light is not being damaged when the bed is being lowered.

9. Place the 2 x 4’s below the foot yoke.

10. Using a phillips head screwdriver, remove the four screws (A) that secure the circuit board enclosure (B) to the bed frame (see figure 4-7 on page 4-24).

Figure 4-7. Foot Drive Assembly



11. Lift and move the circuit board assembly to gain access beneath it.

12. Using a phillips head screwdriver, remove the screw (C) which connects the ground strap to the bed frame.

13. Using a phillips head screwdriver, remove the screw in the cable clamp that secures the limit switch cable to the foot screw assembly.

14. Disconnect the connector to the foot limit switch assembly (D).

15. Using a phillips head screwdriver, remove the screw (E) that secures the limit switch vane bracket (F) to the foot drive tube (G).

16. Remove the foot vane (H) from the limit switch and set it aside to prevent damage.

17. Note the orientation of the vane (H) as it is removed from the limit switch assembly (D).

18. Disconnect the power connector from the foot motor.

19. Using an allen wrench, remove the allen head shoulder bolt (I) that secures the foot drive assembly (J) to the foot yoke (K).

20. Using a wrench, remove the two nuts and bolts (L) that secure the foot motor assembly (J) to the bed frame.

21. Remove the complete motor and drive screw assembly from underneath the head end of the bed.

22. Using a phillips head screwdriver, remove screw (M) that secures the ground strap from the motor to the foot drive channel.

23. Using a wrench, remove the four bolts (N) and three nuts that secure the motor to the foot mounting bracket assembly.

24. Remove the four screws that attach the tube stop (O) to the mounting bracket assembly.

25. Pull the foot drive tube assembly and separate it from the motor coupling.

26. Lift and remove the motor from the foot mounting bracket assembly.

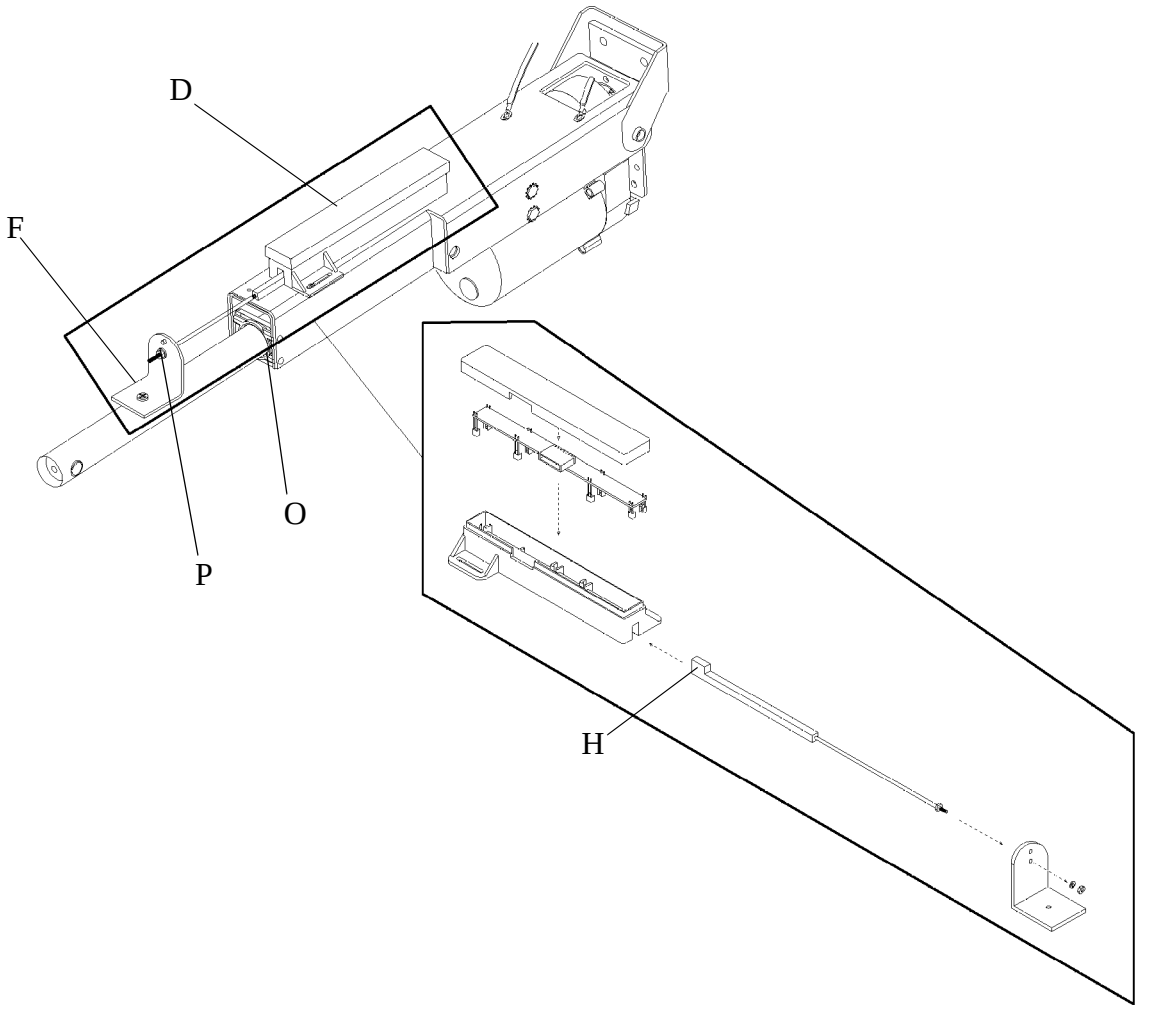
NOTE:
If foot drive screw assembly is being replaced or is to be serviced, follow the procedures outlined in the section “Foot Drive Screw Assembly” on page 4-27.

Replacement

1. Reverse the removal procedure to install the replacement foot drive assembly, **with attention to the following**:
   a. Apply blue Loctite #242 to the threads on the four mounting bracket bolts (N).
   b. Tighten the bracket bolts (N) to 72-88 in-lb torque.
   c. Apply red Loctite #262 to the bolt threads on the shoulder bolt (I).
   d. Tighten the shoulder bolt (I) to 280-315 in-lb torque.
   e. Apply blue Loctite #262 to the threads on the two mounting bracket bolts (L).
   f. Tighten the mounting bracket bolts (L) to 150-190 in-lb torque.

g. Ensure foot limit vane is oriented correctly (H) and is in the correct mounting hole (P) when installing it into the foot limit switch assembly (D) (see figure 4-8 on page 4-26).

Figure 4-8. Foot Limit Switch Assembly



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h. Perform the procedures outlined in the section “Foot Limit Switch” on page 4-33 to ensure that the foot travel of the bed is correct.

2. Ensure that all foot drive functions work properly.

4.6 Foot Drive Screw Assembly

Tools required:

1/4" allen wrench	Blue Loctite #242
Phillips head screwdriver	Red Loctite #262
7/16" wrench	Anti-seize compound

Bed stands, or (2) pieces of 2" x 4" x 32" lumber

Removal

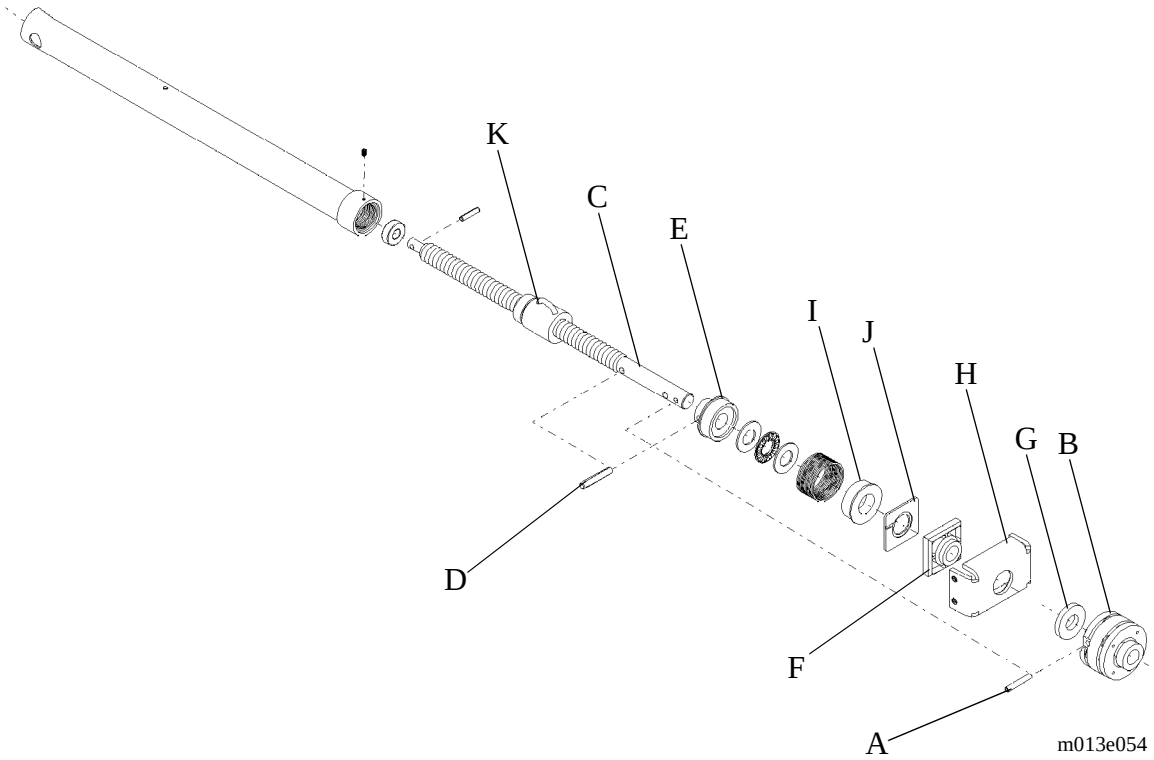
1. Perform steps 1 through 19 of the section “Foot Drive Assembly” on page 4-23”.

2. Carefully separate the drive screw from the mounting bracket assembly.

CAUTION:
Use the appropriate press to carefully remove the pins (A) and (D). Do not use a hammer and punch to remove these pins. Equipment damage could occur.

3. Using a press, remove the 3/16" x 1 1/4" shear-proof pin (A) (see figure 4-9 on page 4-27).

Figure 4-9. Foot Drive Screw Assembly



4. Carefully separate the coupling assembly (B) from the ball screw assembly (C).

5. Using a press, carefully remove the 1/4" x 1 1/2" roll pin (D) from the fixed brake block/drive screw (E).

6. Separate the brake parts, bearing end (F), foot spacer (G), and bearing brace (H).

CAUTION:
Use care to prevent deforming the ball return tube on the ball screw nut assembly. Do not pry or clamp on the ball return tube. Do not rotate the ball screw nut too closely to the end of the threaded area of the screw or equipment damage could occur.

Replacement

1. Reverse the removal procedure to install the replacement foot drive screw **with attention to the following**:
   a. Using a dry, lint-free cloth, clean all parts of the drive screw assembly.
   b. Ensure the bearing end (F), brake washer (J), and the floating brake drum (I) are free of grease, metallic chips, and oil on the braking surface.
   c. Wipe the surface of the floating brake drum with alcohol before assembly.
   d. Ensure the brake washer (J) is oriented towards the bearing end (F).
   e. Ensure that the smooth side is facing the brake drum (I).
   f. Lubricate the drive screw as described under the section “Hilow, Foot, and Head Drive Screw Inspection and Lubrication” on page 6-8.
   g. Assemble the coupling assembly (B), so the pins that secure it to the ball screw, enter into the boss side of the coupling assembly.
   h. Using a press, install the new pins (A) and (D).
   i. Do not insert the pins into the recesses left by the previous pins.
   j. Ensure the ball screw nut (K) and tube spin freely while holding the bearing brace stationary.

2. Ensure all foot drive functions work properly.

4.7 Hilow Limit Switch

Tools required: Phillips head screwdriver (short)
Tape measure
5/16" wrench (optional)

The hilow limit switch adjustment enables the correct maximum raised position of the bed. This adjustment should be checked whenever the bed's hilow system is serviced (i.e. motor replacement, etc.) and during preventive maintenance. This switch is used to control the bed's travel limits and the Trendelenburg limits. Adjustment is achieved by controlling the travel position of a vane within an infrared sensing optical package (which in turn sends the proper signals to the digital control board that controls the hilow motor).

There are five limits controlled by this switch. Adjusting the bed travel to the correct maximum height will provide the correct adjustment of the other four positions.

Checking the Hilow Limit Switch

1. Ensure that the bed is operational (with hilow system correctly installed and connected).

1. Set the brake/steer pedal to the brake position.

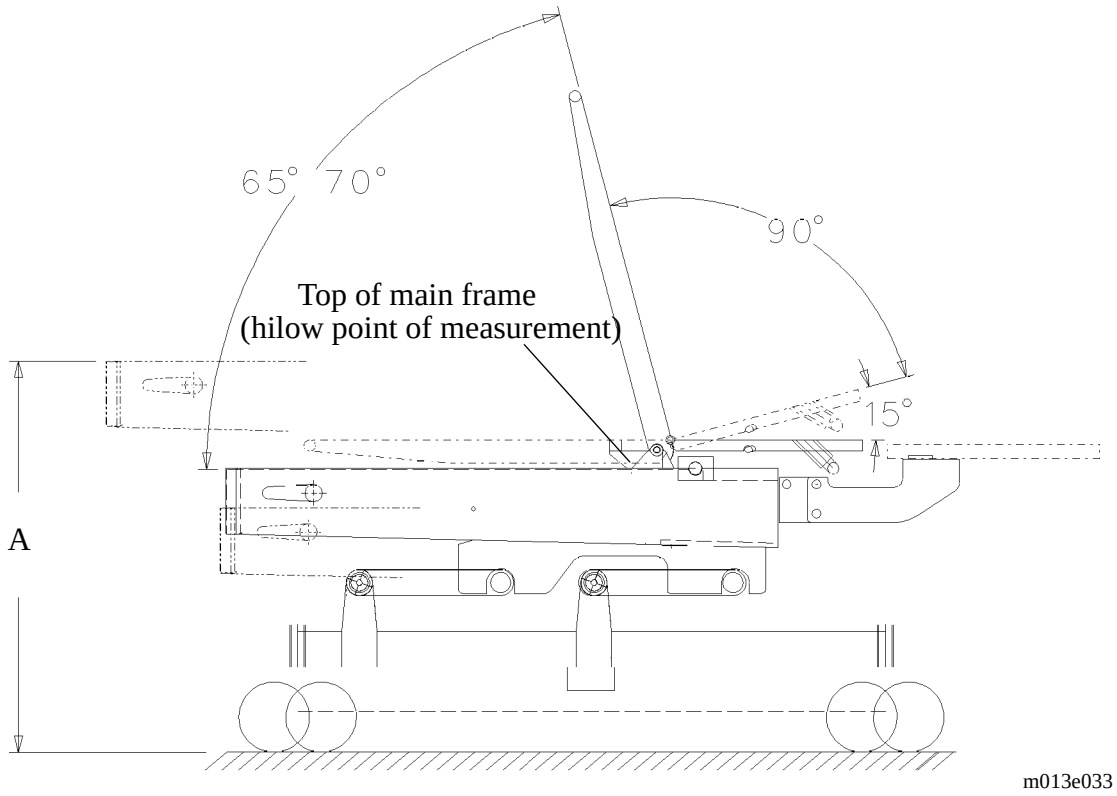
2. Ensure the bed is out of the Trendelenburg position.

3. Raise the head section to the high position using the head function.

4. Raise the bed to the high position using the hilow function.

5. Measure from the top center point of the main frame (near the head section pivot point) to the floor. Distance (A) should be 32.625 to 33 inches (see figure 4-10 on page 4-30).

Figure 4-10. Hilow Optical, Foot Optical, and Trendelenburg Limit Switch



6. If dimension (A) is not correct, adjust the hilow limit switch assembly by following the procedures in the section “Adjustment” on page 4-30.

Adjustment

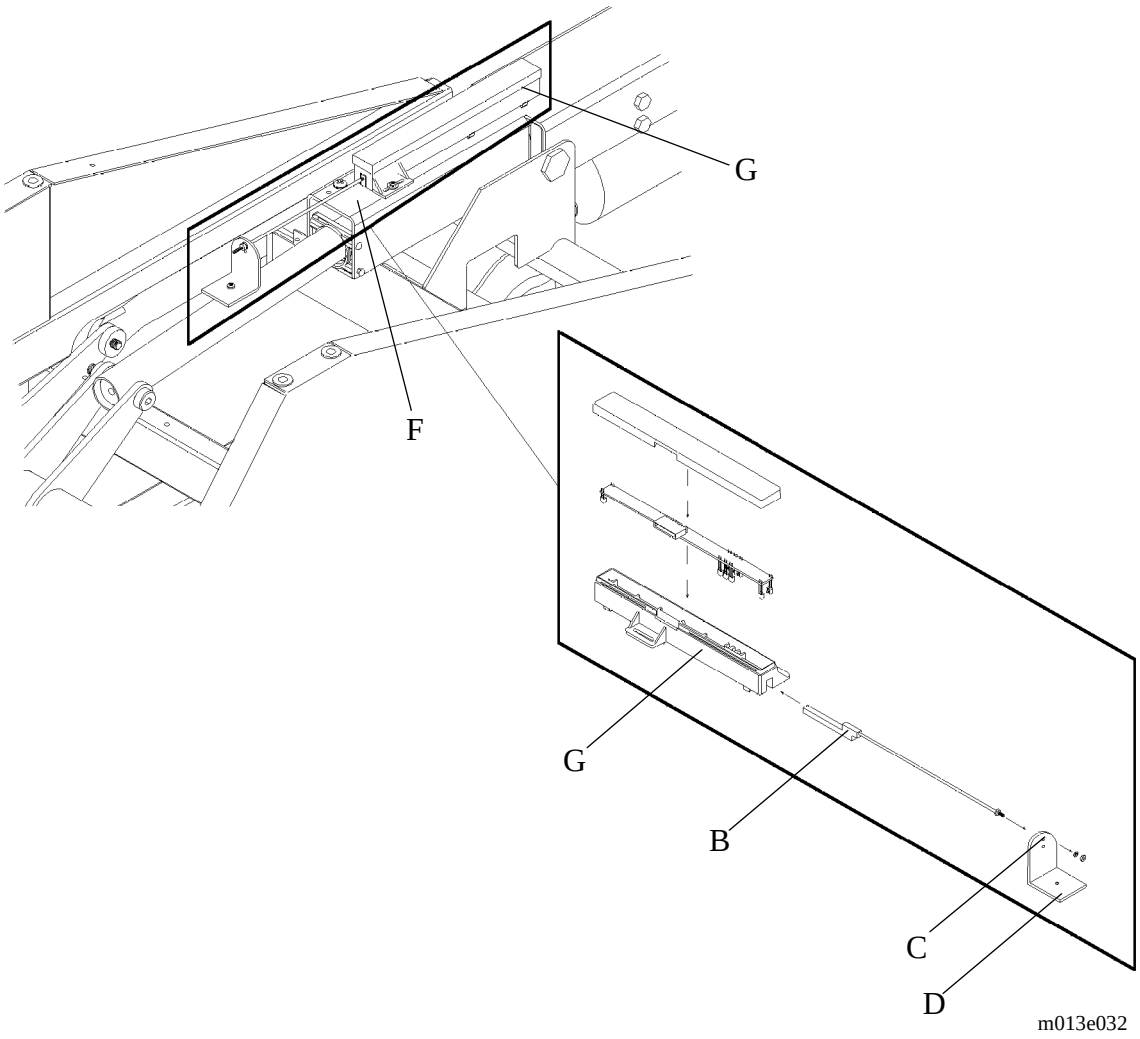
1. If dimension (A) is not 32.625-33 inches, the hilow limit switch housing must be adjusted by performing steps 2 through 11.

2. Using a phillips head screwdriver, the four screws that fasten the circuit board enclosure to the frame.

3. To obtain easier access to the limit switch housing, carefully lift and move the circuit board assembly.

4. Ensure that the limit switch vane (B) is attached securely to the top hole (C) in the vane bracket (D).

Figure 4-11. Adjusting the Hilow Limit Switch



5. Using a phillips head screwdriver, loosen the screws that attach the limit switch assembly (E) to the top of the hilow drive pivot bracket assembly (F).

6. Slide the switch housing (G) toward the foot the of the bed to decrease the bed's maximum height, or toward the head of the bed to increase the bed's maximum height.

WARNING:
Slide the hilow limit switch housing in small movements. Equipment damage could occur.

7. Using a phillips head screwdriver, tighten the limit switch housing mounting screws.

8. Use a marker pen to place aligning marks across the housing to enable a visual check of the limit switch housing position.

9. Lower, then raise the bed using the hilow function.

10. Check the bed height at the high position.

11. Repeat steps 4 through 11 until the high position of the bed is correct.

NOTE:
If the limit switch adjustment seems difficult to obtain (or erratic), ensure that the vane (B) is not installed upside-down. Vane orientation must be as illustrated. Ensure that the limit switch cable is seated firmly into the switch housing and the digital control board.

12. After obtaining the correct bed high position, tighten the screws that attach the limit switch housing (G) to the hilow pivot bracket assembly (F).

NOTE:
An adjustment to the hilow limit switch requires verification of the foot limit switch adjustment. See “Foot Limit Switch” on page 4-33.

13. Check the foot limit switch adjustment as instructed in the section “Foot Limit Switch” on page 4-33.

14. Install the four bolts and secure the circuit board enclosure to the frame.

15. Install the top motor cover over the drive system.

4.8 Foot Limit Switch

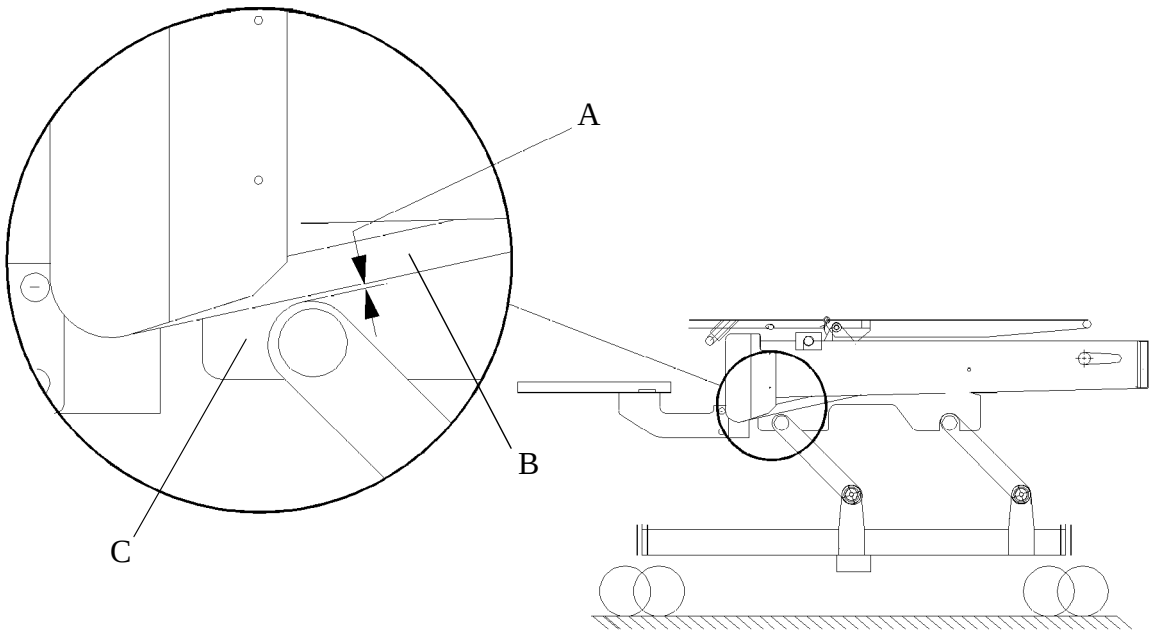
Tools required: Phillips head screwdriver (short)5/16" wrench (optional)

The adjustment of the foot limit switch should be performed whenever the bed's foot system is serviced (i.e. foot motor replacement, etc.), hilow switch is adjusted, and during preventive maintenance. Adjustment is achieved by controlling the travel position of a vane within an infrared sensing optical package.

Checking the Foot Limit Switch (Without Foot Pause)

1. Set the brake/steer pedal to the brake position.
2. Ensure the bed is out of the Trendelenburg position.
3. Raise the bed to the high position using the hilow function.
4. Raise the head section to the high position using the head function.
5. Lower the foot section to the low position using the foot function.
6. Measure the gap (A) between the foot section (B) lift arm and the hilow lift arm (C) (see figure 4-12 on page 4-33).

Figure 4-12. Adjustment Without Foot Pause



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7. If the measurement is less than or more than 1/8" (3.175 mm), perform steps 1 through 13 of the section “Adjustment (Without Foot Pause)” on page 4-34. Otherwise, go to step 14.

Adjustment (Without Foot Pause)

WARNING:
Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

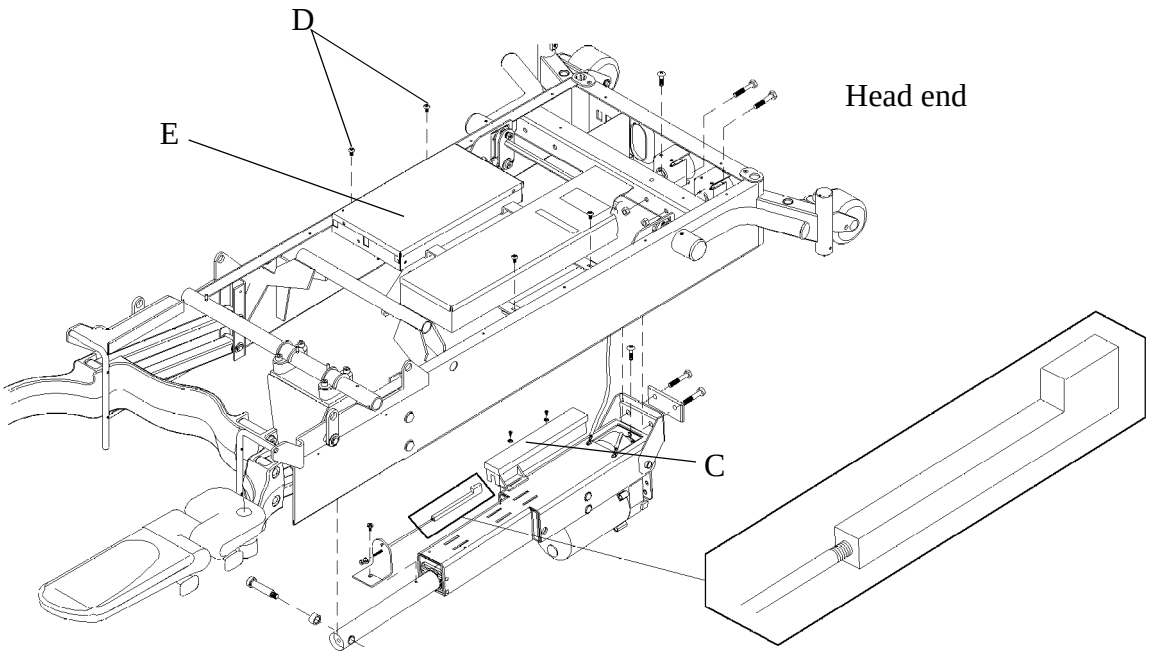
1. Unplug the bed from its power source.

2. Using a phillips head screwdriver, remove the screws securing the top motor cover.

3. Remove the top motor cover from the bed.

4. Using a phillips head screwdriver, remove the four screws (D) securing the circuit board enclosure (E) to the bed frame (see figure 4-13 on page 4-34).

Figure 4-13. Foot Limit Switch Location



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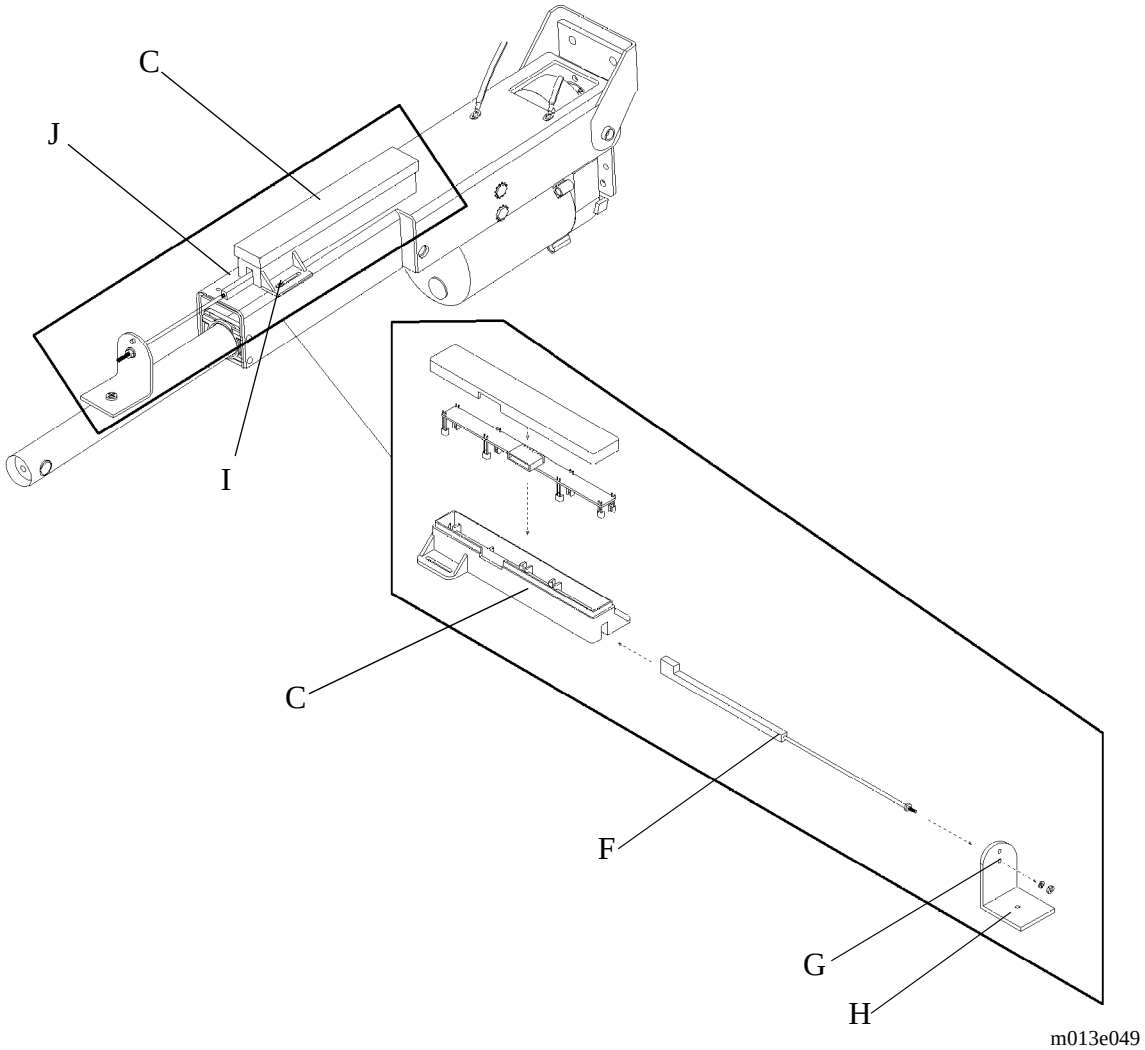
5. To improve access to the foot limit switch assembly (C), carefully lift and move the circuit board enclosure (E) to the patient's right-hand side of the bed. This provides access to the foot limit switch assembly on the patient's left-hand side of the bed.

6. Check the foot limit switch vane (F) and ensure that it is securely attached to the bottom hole (G) in the foot limit switch vane bracket (H) (see figure 4-14 on page 4-35).

Figure 4-14. Foot Limit Switch Assembly



7. Using a phillips head screwdriver, loosen the two screws (I) that secure the foot limit switch assembly (C) to the top of the motor mounting bracket (J).

8. Slide the switch assembly toward the foot end of the bed to increase the height of the foot section, or toward the head end of the bed to decrease the height of the foot section.

WARNING:
Slide the foot limit switch housing in small movements or equipment damage could occur.

9. Using a phillips head screwdriver, tighten the mounting screws (I) on the limit switch housing.

10. Use a marker pen to place aligning marks across the switch assembly (C) and mounting bracket (J). This will enable a visual check of the foot limit switch position.

11. Plug the bed into an appropriate power source.

12. **Raise, then lower** the foot section using the foot function.

13. Repeat steps 6 through 12 until the correct foot level position is obtained.

14. After obtaining the correct adjustment, secure the position of the limit switch assembly to the foot motor mounting bracket assembly by tightening screws.

15. Replace the top motor cover back on to the bed.

16. Using a phillips head screwdriver, secure the screws securing the top motor cover.

17. Reverse steps 1 through 5 to complete the adjustment procedure.

18. Ensure that all bed functions work properly.

Checking the Foot Limit Switch (With Foot Pause)

1. Set the brake/steer pedal to the brake position.

2. Ensure the bed is out of the Trendelenburg position.

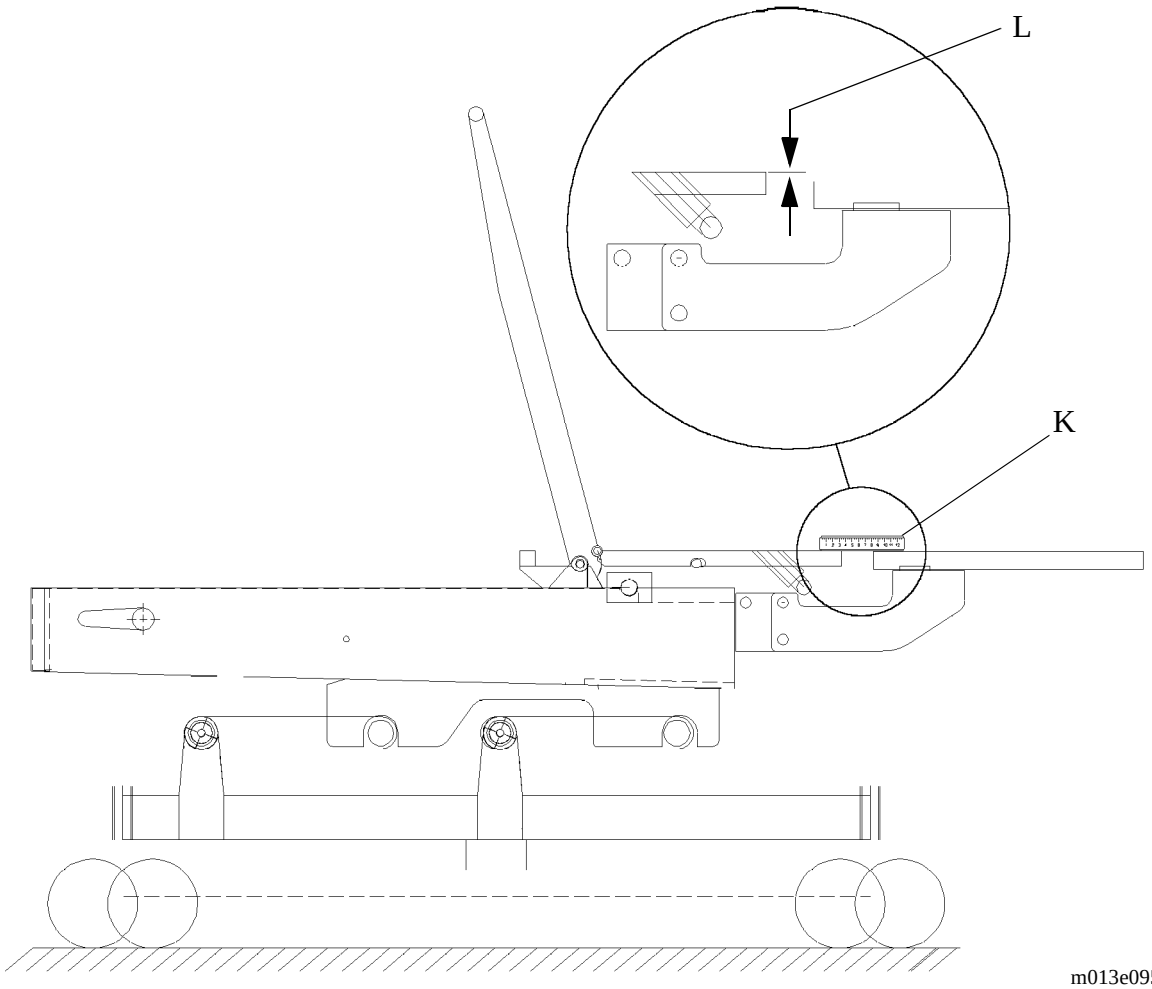
3. Raise the bed to the high position using the hilow function.

4. Raise the head section to the high position using the head function.

5. Remove the mattress from bed.

6. Lower the head section to flat the flat position.
7. Ensure the seat section is level.
8. Raise the foot section to the high position using the foot function.
9. Lower the foot section using the foot function.
10. Release the *down* button at the point where the foot travel pauses 1 second.
11. Determine the foot section level position by laying a straight edge (K) across the middle of the foot and seat sleep surfaces (see figure 4-15 on page 4-37).

Figure 4-15. Foot Limit Switch Measurement (With Foot Pause)



12. The maximum allowable deviation (L) is +/- 0.25 inch. If the measurement (L) is less than or more than +/- 0.25 inch, perform steps 1 through 12 of the section “Adjustment (With Foot Pause)” on page 4-38. Otherwise, go to step 17.

Adjustment (With Foot Pause)

1. Raise the head section to the high position using the head function.

WARNING:
Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

2. Unplug the bed from its power source.

3. Remove the top motor cover from the bed.

4. Using a phillips head screwdriver, remove the four screws (D) securing the circuit board enclosure (E) to the bed frame.

5. To improve access to the foot limit switch assembly (C), carefully lift and move the circuit board enclosure (E) to the patient’s right-hand side of the bed. This provides access to the foot limit switch assembly on the patient’s left-hand side of the bed.

6. Using a phillips head screwdriver, loosen the two screws (I) that secure the foot limit switch assembly (C) to the top of the motor mounting bracket (J).

7. Slide the switch assembly toward the foot end of the bed to increase the height of the foot section, or toward the head end of the bed to decrease the height of the foot section.

WARNING:
Slide the foot limit switch housing in small movements or equipment damage could occur.

8. Using a phillips head screwdriver, tighten the mounting screws (I) on the limit switch housing.

9. Use a marker pen to place aligning marks across the switch assembly (C) and mounting bracket (J). This will enable a visual check of the foot limit switch position.

10. Plug the bed into an appropriate power source.
11. **Raise, then lower** the foot section using the foot function.
12. Repeat steps 6 through 12 until the correct foot level position is obtained.
13. After obtaining the correct adjustment, secure the position of the limit switch assembly to the foot motor mounting bracket assembly by tightening screws.
14. Replace the top motor cover back on to the bed.
15. Using a phillips head screwdriver, secure the screws securing the top motor cover.
16. Reverse steps 1 through 5 to complete the adjustment procedure.
17. Ensure that all bed functions work properly.

4.9 Head Limit Switches

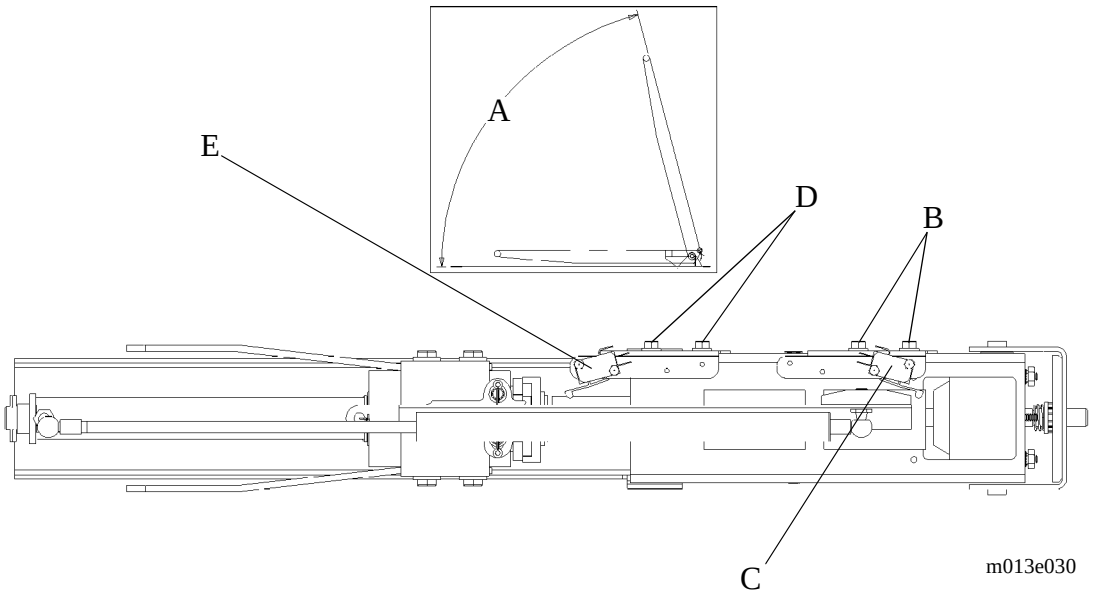
Tools required: Phillips head screwdriver (short)
Protractor (magnetic type recommended)
3/8" wrench

The head limit switches enable the correct maximum angle of the head to be achieved and shut off the head drive when its “flat” position is obtained. Adjustment is achieved by contact-type micro switches which send the proper signals to the digital control board that control the head motor.

Checking the Head Limit Switch

1. Set the brake/steer pedal to the brake position.
2. Ensure the bed is out of the Trendelenburg position.
3. Raise the head section the high position using the head function.
4. Using a suitable protractor, check the angle of the head elevation relative to the main frame. The angle (A) should be 65 to 70 degrees (with the bed out of the Trendelenburg position) (see figure 4-16 on page 4-40).

Figure 4-16. Head Limit Switch Location



5. If the measurement is less than or more than 65-70 degrees, perform steps 1 through 7 of the section “Adjustment” on page 4-41. Otherwise, go to step 8.

Adjustment

1. Using a phillips head screwdriver, remove the screws securing the top motor cover.
2. Remove the top motor cover from the bed.
3. Using a wrench, loosen the bolts (B) that fasten the head up limit switch (C) to the head drive assembly.
4. **Lower, then raise** the head section using the head function. If head section stops too soon, move the head up limit switch toward the head and of the bed. If the head over travels, move the head up switch toward the foot end of the bed.
5. Tighten the bolts (B) after making any adjustment.
6. Check the adjustment by lowering the head section. Then, raise it again to the maximum position.
7. Check for the correct angle (A) of 65-70 degrees. Repeat adjustment as necessary.
8. Lower the head section to its low position using the head function.
9. Ensure the top motor cover is removed.
10. Measure the gap between the top of the main frame and the head section bumpers. The measurement should be approximately 1/8" (3.175 mm).
11. If the measurement is less than or more than 1/8" (3.175 mm), perform steps 17 through 24. Otherwise, go to step 25.
12. Using a wrench, loosen the bolts (D) that secure the head down limit switch (E) to the head drive assembly.
13. Raise, then lower the head section using the head function.
14. If the head section stops too soon (before the recommended gap is obtained), move the head down limit switch toward the foot end of the bed.

15. If there is no gap (or the head motor keeps running when the head section is flat), move the head down limit switch toward the head end of the bed.

16. Repeat the adjustment as required to achieve the correct flat position of the head section.

17. Tighten the bolts (E) after making any adjustment.

18. Check the adjustment by raising the head section using the head function. Then, lower it again to the low position.

19. Check for the correct gap (D) of 1/8" (3.175 mm). Repeat the adjustment procedure as necessary.

20. Install the top motor cover over the drive system.

21. Ensure all bed functions work properly.

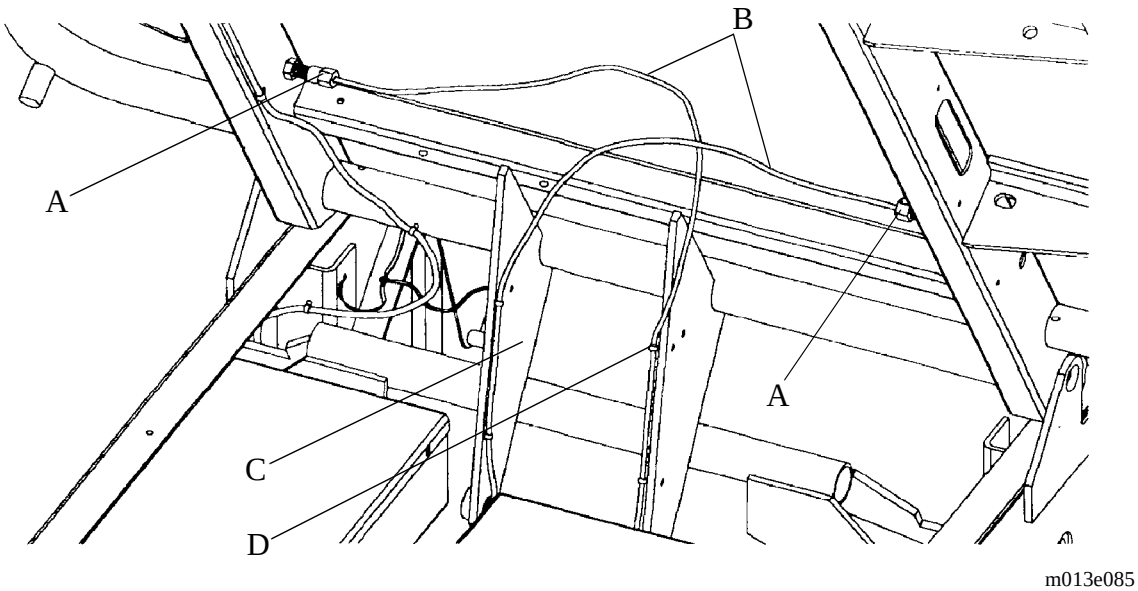
4.10 CPR Release

Tools required: Adjustable wrench

Adjustment

1. Set the brake/steer pedal to the brake position.
2. Ensure the bed is out of the Trendelenburg position.
3. Place the bed in a mid-height position using the hilow function.
4. Raise the head section to the high position using the head function.
5. Ensure the siderails are in the up position.
6. Ensure the CPR cables (B) are routed inside the head support weldements (C) (see figure 4-17 on page 4-43).

Figure 4-17. CPR Release



7. Ensure the CPR cables (B) are secured **loosely** with the four wire ties (D) located on the head support weldements (C).
8. Using a wrench, adjust the nuts (A) until the CPR release works properly on both sides of the bed.

4.11 Trendelenburg Spring and Sensing Switch

Tools required: Phillips head screwdriver (short)
5/16" wrench
1/2" wrench

There are two contact-type micro switches installed in the Trendelenburg mechanism. Only one switch requires adjustment. Proper adjustment of the Trendelenburg spring/sensing switch (TS) prevents the bed from lowering too low while in the Trendelenburg position. The Trendelenburg handle switch (TH) installed in the release arm mechanism is activated whenever the Trendelenburg lever is pulled and does not require adjustment.

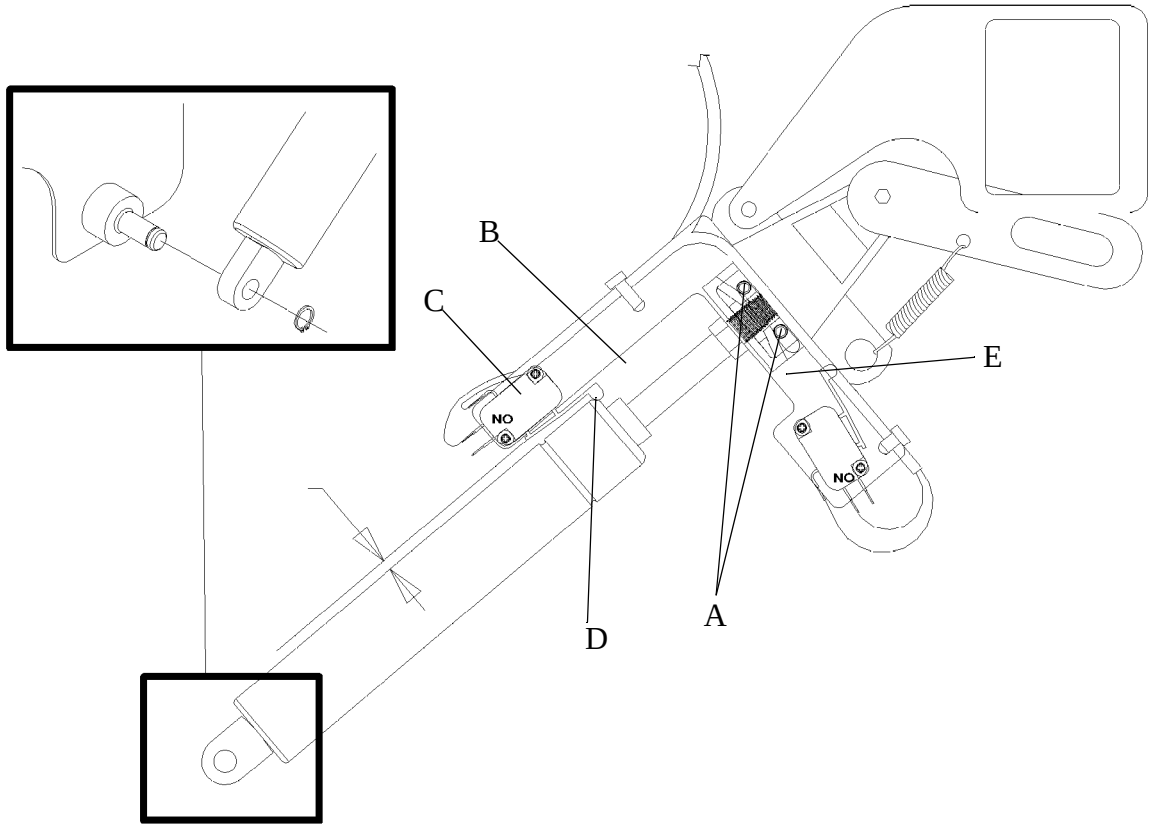
Adjustment

1. Set the brake/steer pedal to the brake position.
2. Ensure the bed is out of the Trendelenburg position.
3. Raise the head section to the high position using the head function.

SHOCK HAZARD:
Unplug the unit from its power source. Failure to do so could result in personal injury or equipment damage.

4. Unplug the bed from its power source.
5. Remove the top motor cover.
6. If the bed is equipped with the optional air system, the 5/16" Trendelenburg switch adjusting bolts are accessible. However, easier access may be obtained by removing the air package. Refer to “Bed Surface Air System (Old Style)” on page 4-71 or “Bed Surface Air System (New Style)” on page 4-75 for removal and installation procedures.
7. Using a phillips head screwdriver, loosen the two screws (A) that secure the switch bracket (B) to the Trendelenburg release mechanism (gas head and release lever) (see figure 4-18 on page 4-45).

Figure 4-18. Trendelenburg Assembly



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8. Using the Trendelenburg handle and while observing the actuator arm of the TS switch (C), place the bed in the Trendelenburg position.

9. When the bed is in Trendelenburg, switch (C) should be activated by the Trendelenburg cylinder body.

10. Ensure that the actuator arm (D) is fully activated. (The arm is fully activated when the switch contacts *switch* positions.)

11. Using a phillips head screwdriver, tighten the two screws (A) that secure the switch bracket (B) to the Trendelenburg release mechanism (E).

12. After the adjustment is complete, ensure that the Trendelenburg system is operating correctly. Refer to “TL” and “TH” switch checks described in section “Hilow Optical, Foot Optical, and Trendelenburg Limit Switch Inspection” on page 6-12.

13. Reverse the removal procedures to reinstall the optional air system (if equipped) and the top motor cover.

14. Ensure that all Trendelenburg functions work properly.

4.12 Trendelenburg Cylinder

Tools required: Phillips head screwdriver
11/16" wrench
Split-ring removal tool

WARNING:
The head end of the main frame is supported by the two Trendelenburg cylinders. Any servicing will require a support device be placed just beneath the head end of the main frame. Failure to do so could result in personal injury or equipment damage.

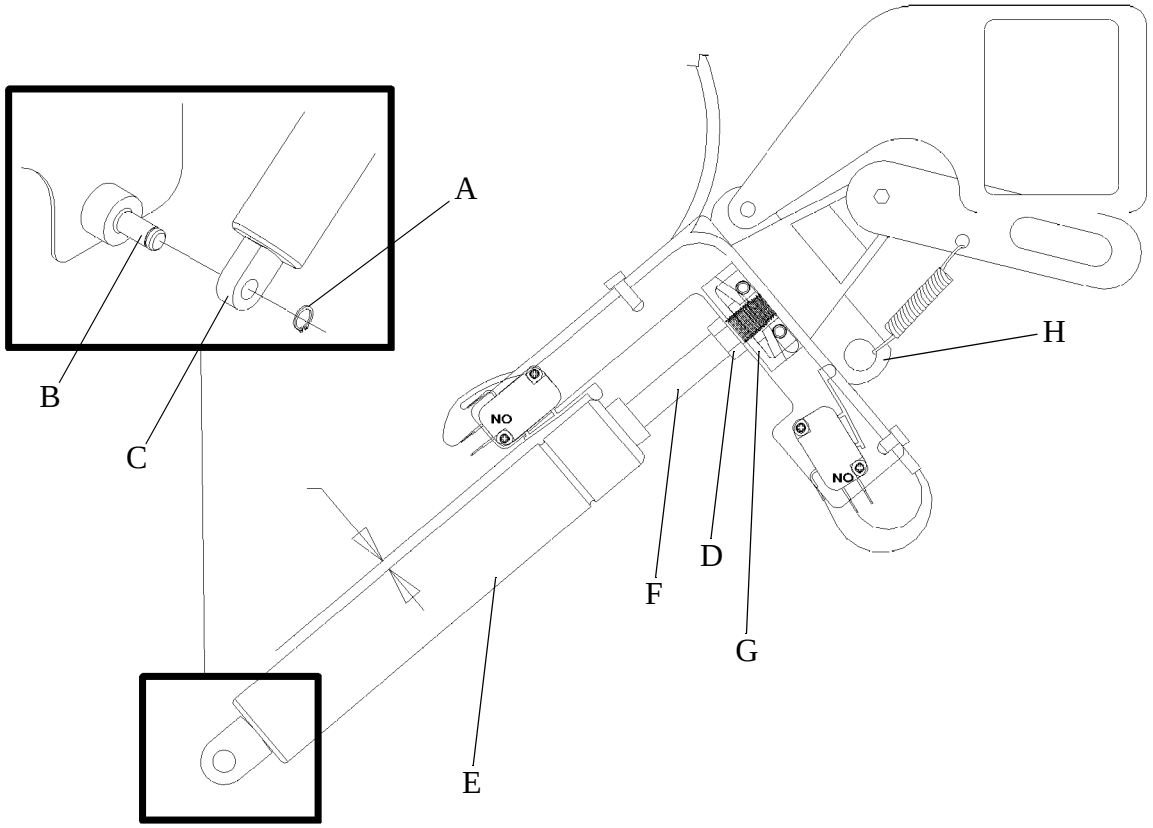
Removal

1. Set the brake/steer pedal to the brake position.
2. Ensure the bed is out of the Trendelenburg position.
3. Raise the head section to the high position using the head function.

SHOCK HAZARD:
Unplug the unit from its power source. Failure to do so could result in personal injury or equipment damage.

4. Unplug the bed from its power source.
5. Remove the top motor cover.
6. Using the split-ring removal tool, remove the split-ring (A) from the post (B) at the bottom of the Trendelenburg cylinder (C) (see figure 4-19 on page 4-48).

Figure 4-19. Trendelenburg Cylinder Assembly



7. Slide the cylinder (C) off the post (B).

NOTE:
It maybe necessary to apply upward force on the head-end of the main frame to free the cylinder from the post.

8. Using a wrench, loosen the jam nut (D) on the rod end (F) of the gas cylinder (E).

9. Turn the rod end (F) counterclockwise to remove it from the release assembly (G).

Replacement

1. Spin the jam nut (D) all the way down on the new gas cylinder (E).

2. Thread the rod end (F) of the new cylinder (E) into the release assembly (G) until the plunger (in the end of the rod) just touches, or is 1/16" away from the release arm (H).

3. Using a wrench, tighten the jam nut (D) to lock the rod end (F) in this position.

4. Slide the bottom of the Trendelenburg cylinder (E) onto the post (B) and install the split-ring (A) to secure it.

5. Check for proper Trendelenburg operation by activating the Trendelenburg handle.

6. Ensure the cylinders release when the handle is in the middle of its travel.

7. Install the top motor cover over the drive system.

4.13 Mattress Assembly

Tools required: None

Removal

1. Set the brake/steer pedal to the brake position.
2. Ensure the bed is out of the Trendelenburg position.
3. Carefully lift the mattress from the head end of the bed.
4. Locate and unfasten the two mattress retaining snaps beneath the seat section.
5. If the mattress has air bladders, disconnect the two hoses located beneath the seat section.
6. Lift the side panels on the foot section and unfasten the four snaps on the foot mattress.

Replacement

1. Reverse the removal procedure to install the replacement mattress.
2. Ensure the two air hoses are properly installed below the seat section.

4.14 Labor Grips

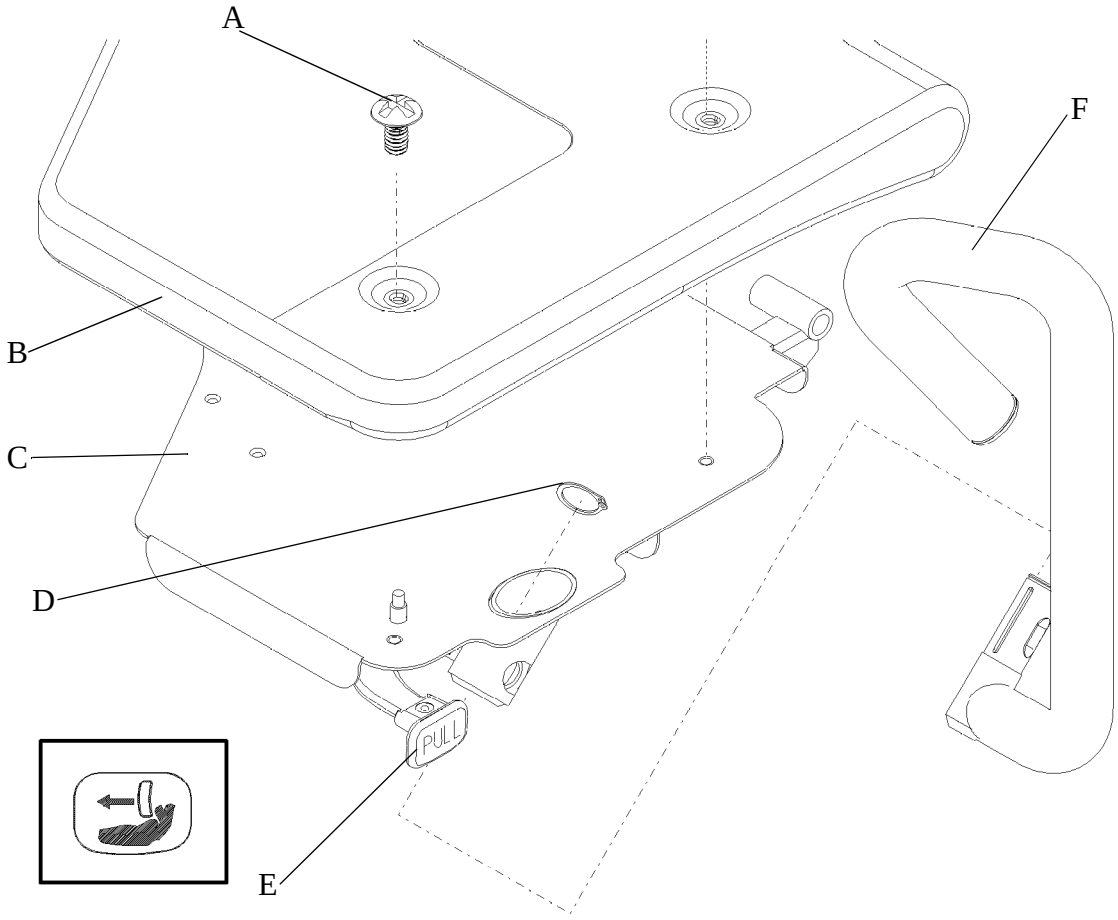
Tools required: Phillips head screwdriver Anti-seize lubricant
External snap-ring removal tool

Removal

1. Remove the mattress to gain access to the seat panel. Refer to section the "Mattress Assembly" on page 4-50.

2. Using a phillips head screwdriver, remove the screws (A) that fasten the seat panel (B) to the seat pan (C) (see figure 4-20 on page 4-51).

Figure 4-20. Labor Grip Assembly



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3. Using the external snap-ring removal tool, remove the external snap ring (D) from the pull handle.

4. Pull and hold the release (E) for the labor grip handle (F).

5. Slide the labor grip handle (F) from its socket.

Replacement

1. Reverse the removal procedure to install the new labor grip.
2. Apply lubricant—sanitary spray P/N 36958 to the arm of the labor grip that slides into the socket.
3. Ensure all functions of the labor grip work properly.

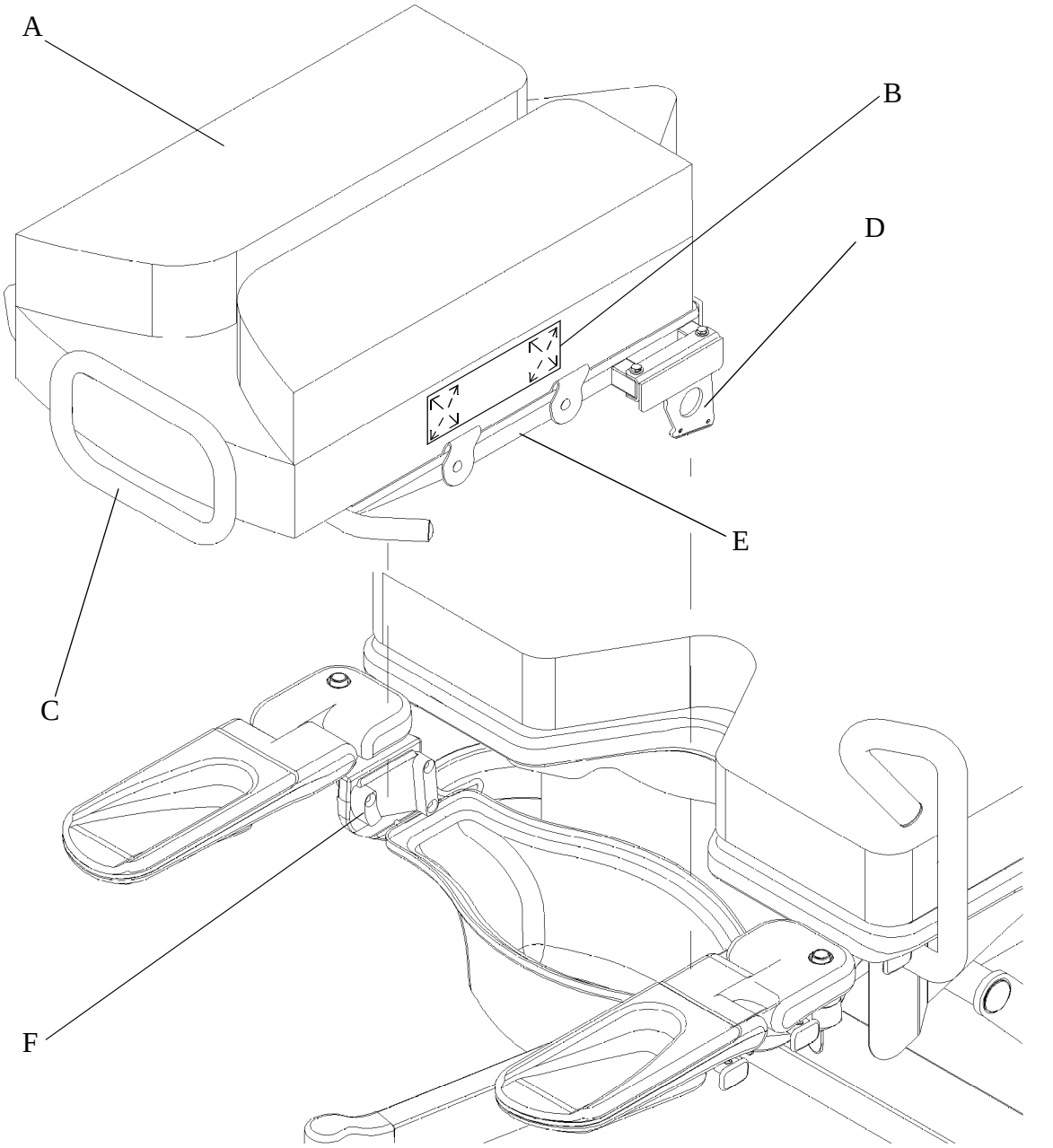
4.15 Foot Section (Lift Off)

Tools required: None

Removal

1. Pivot the foot mattress side panels (A) up (see figure 4-21 on page 4-53).

Figure 4-21. Foot Section (Lift Off)



2. Grasp the mattress handles (B) located on both sides of the mattress.
3. Pull straight up then toward yourself.
4. The foot section (E) pull handle (C) doubles as a base to allow the foot section to stand alone.

Replacement

1. Grasp the mattress handles (B) located on both sides of the mattress.
2. Align the foot section slides (D) with their receptacle (F) on the bed.
3. Lower the foot section (E) onto the bed.
4. Tug upward on the pull handle (C) to verify the foot section is securely mounted to the bed.

WARNING:
Failure to properly mount the foot section to the slide receptacles may cause equipment damage or personnel injury.

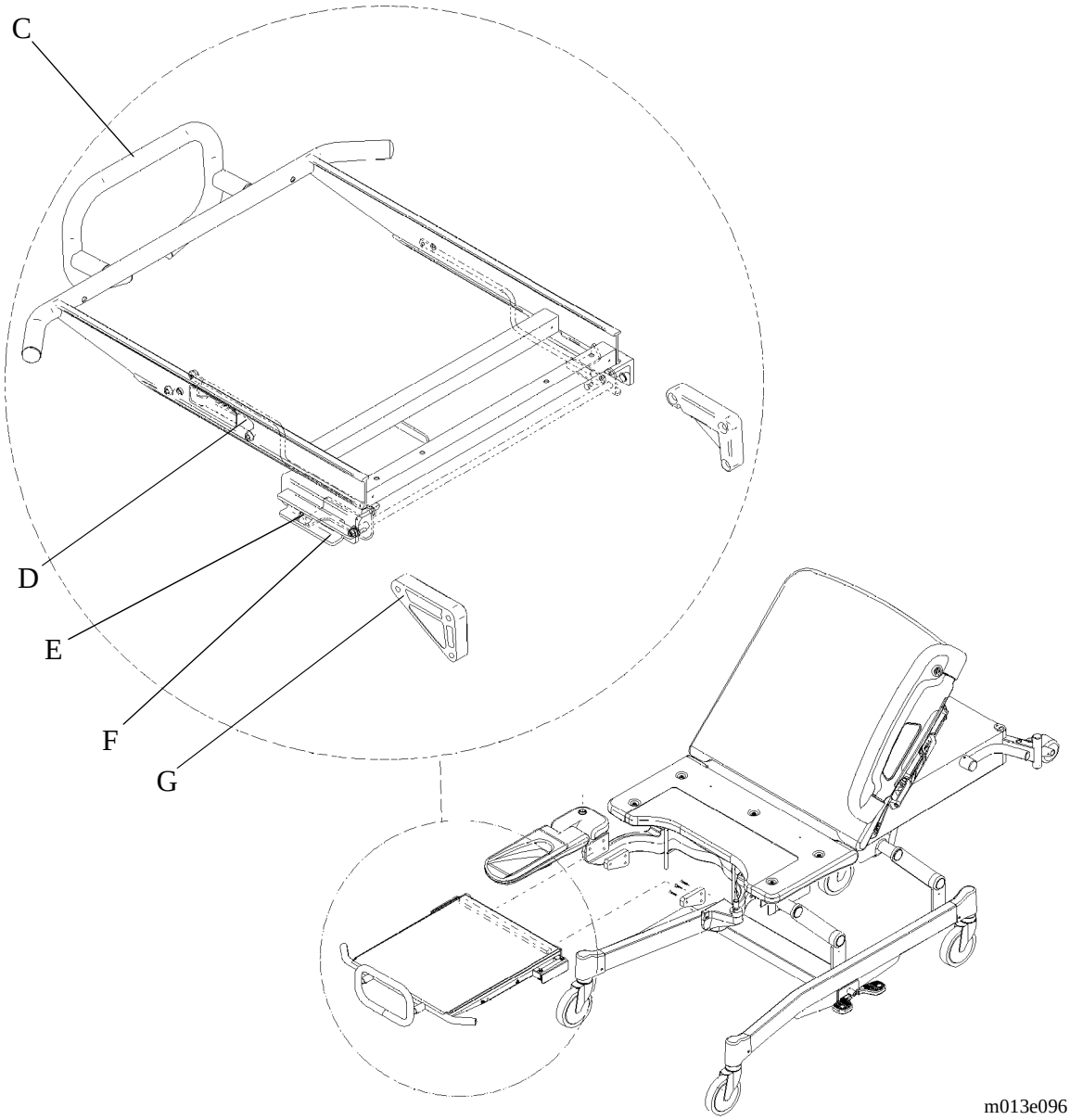
4.16 Foot Section (Slide Off)

Tools required: None

Removal

1. Pivot the foot mattress side panels (A) up (see figure 4-21 on page 4-53).
2. Pull the foot section release handles (D) to release the latch mechanism (E) from the channel slide (F) (see figure 4-22 on page 4-55).

Figure 4-22. Foot Section (Slide Off)



3. Grasp the mattress handles (B) located on both sides of the mattress (see figure 4-21 on page 4-53).

4. Slide the foot section straight out toward yourself.

5. The foot section pull handle (C) doubles as a base to allow the foot section to stand alone.

Replacement

1. Grasp the mattress handles (B) located on both sides of the mattress (see figure 4-21 on page 4-53).

2. Align the foot section channel slides (F) with their mounting bracket (G) on the bed.

3. Slide the foot section onto the bed.

4. Ensure the foot section latch mechanism (E) locks into the channel slide (F).

5. Tug out on the pull handle (C) to verify the foot section is securely mounted to the bed.

WARNING:
Failure to properly mount the foot section to the slide receptacles may cause equipment damage or personnel injury.

4.17 Capacitor

Tools required: Phillips head screwdriver Needle nose pliers
1/2" wrench

SHOCK HAZARD:
The high voltage capacitors installed in the electrical system present an electrical shock hazard and must be handled with care during service procedures. Unplug the bed from its power source. Perform standard electrical service procedures to discharge the capacitors before attempting service within the circuit board enclosure. Adhere to all electrical safety precautions when servicing the bed's electrical system.

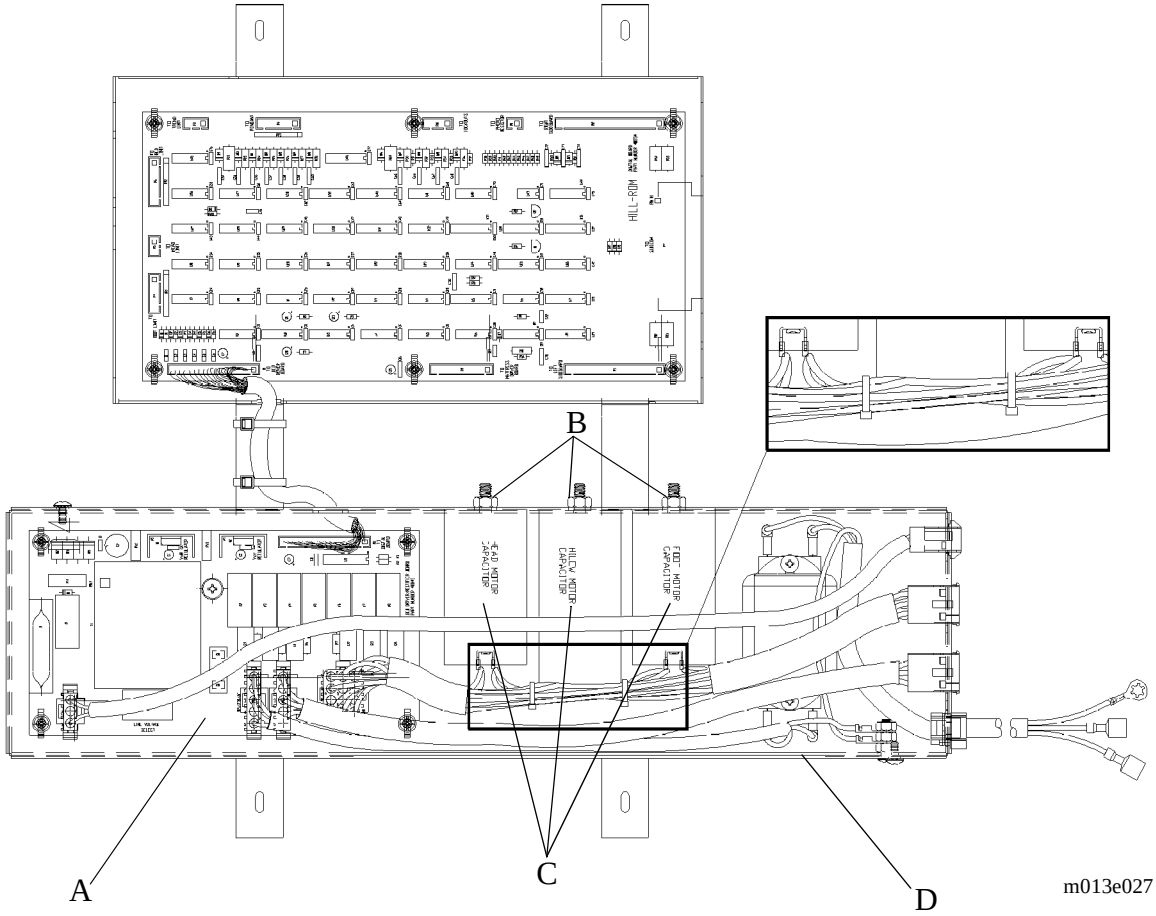
Removal

1. Set the brake/steer pedal to the brake position.
2. Ensure the bed is out of the Trendelenburg position.
3. Raise the head section to the high position using the head function.

SHOCK HAZARD:
Unplug the unit from its power source. Failure to do so could result in personal injury or equipment damage.

4. Unplug the bed from its power source.
5. Using a phillips head screwdriver, remove the screws securing the top motor cover.
6. Remove the top motor cover from the bed.
7. Remove the cover over the bed drive and rectifier circuit board (A) (see figure 4-23 on page 4-58).

Figure 4-23. Capacitor Location



8. Identify the capacitor (C) to be replaced by its label.

SHOCK HAZARD:
The high voltage capacitors installed in the electrical system present an electrical shock hazard and must be handled with care during service procedures. Unplug the bed from its power source. Perform standard electrical service procedures to discharge the capacitors before attempting service within the circuit board enclosure. Adhere to all electrical safety precautions when servicing the bed's electrical system.

9. Using a wrench, remove the hex nut (B) securing the capacitor (C) to the circuit board enclosure (D).

10. At the old capacitor (C), disconnect the terminals, one at a time.

11. Remove the old capacitor.

Replacement

1. Insert the new capacitor (C) into the circuit board enclosure (D).
2. Connect the appropriate terminal on the new capacitor (C).
3. Using a wrench, install the hex nut (B) and secure the capacitor in its proper position.
4. Install the cover over the bed drive and rectifier circuit board.
5. Install the top motor cover over the drive system.
6. Ensure that all bed functions work properly.

Adjustment

1. No adjustments are required for the capacitor.

4.18 Bed Drive and Rectifier Circuit Board

Tools required: Phillips head screwdriver Needle nose pliers

SHOCK HAZARD:
The high voltage in the electrical system presents an electrical shock hazard. Unplug the bed from its power source. Perform standard electrical service procedures to discharge the capacitors before attempting service within the circuit board enclosure. Adhere to all electrical safety precautions when servicing the bed's electrical system.

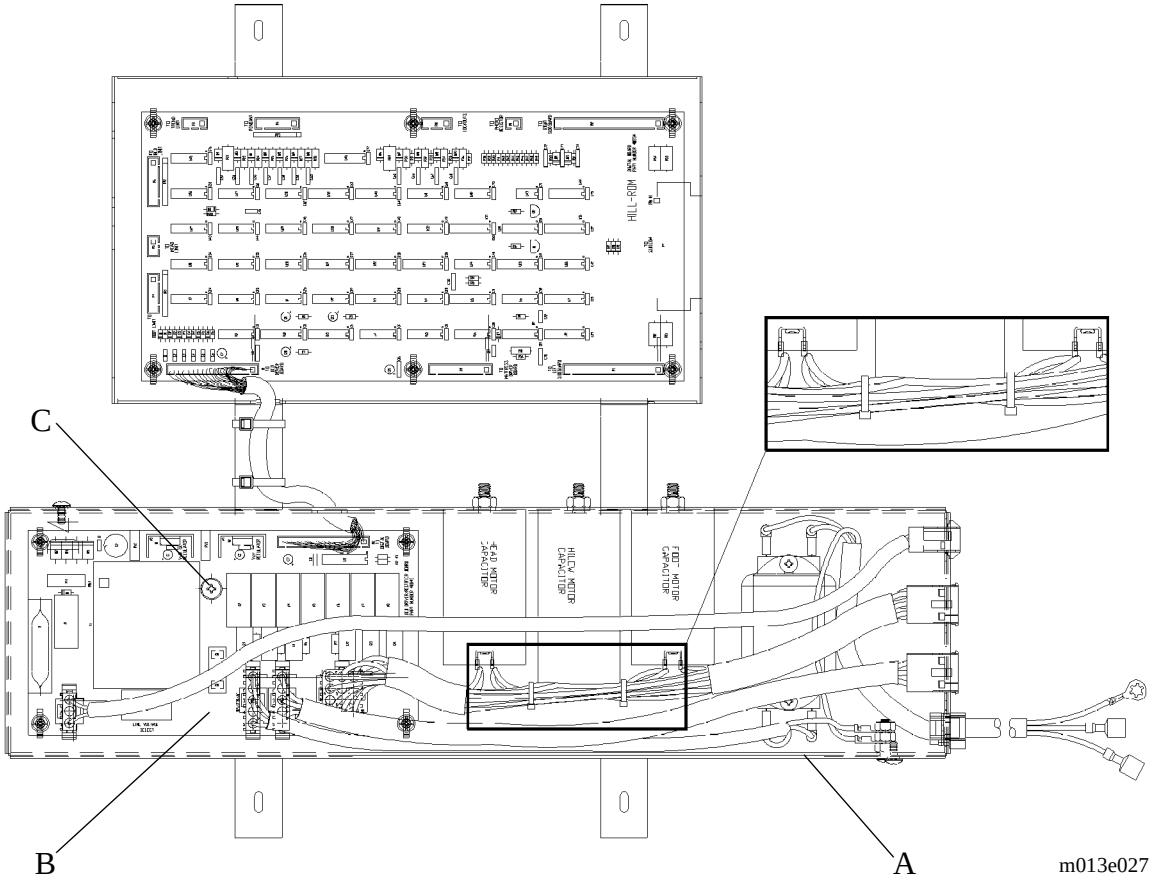
Removal

1. Set the brake/steer pedal to the brake position.
2. Ensure the bed is out of the Trendelenburg position.
3. Raise the head section to the high position using the head function.

SHOCK HAZARD:
Unplug the unit from its power source. Failure to do so could result in personal injury or equipment damage.

4. Unplug the bed from its power source.
5. Using a phillips head screwdriver, remove the screws securing the top motor cover.
6. Remove the top motor cover from the bed.
7. Remove the cover from the circuit board enclosure (A) (see figure 4-24 on page 4-61).

Figure 4-24. Bed Drive and Rectifier Circuit Board Location



8. Identify and disconnect the wiring connectors from the bed drive and rectifier circuit board (B).

9. Using a phillips head screwdriver, remove the screw (C) near the center of the board that secures it within the circuit board enclosure (A).

10. Using needle nose pliers, compress the circuit board's mounting clips.

11. Maneuver and remove the bed drive and rectifier board (B) from the enclosure.

CAUTION:
Use care when handling the circuit board (PC board). Handle PC boards by their edge. Do not touch the components on the board. This should prevent unnecessary static damage to the components.

Replacement

1. Install the new circuit board by reversing the removal procedures.
2. Ensure the wiring connectors are firmly connected to the board receptacles.
3. Install the cover on the circuit board enclosure.
4. Install the top motor cover over the drive system.
5. Ensure all bed functions work properly.

Adjustment

1. No adjustments are required for the bed drive and rectifier circuit board.

4.19 Digital Control Board

Tools required: Phillips head screwdriver Needle nose pliers
Standard head screwdriver

WARNING:
Adhere to all electrical safety precautions when servicing the bed's electrical system.

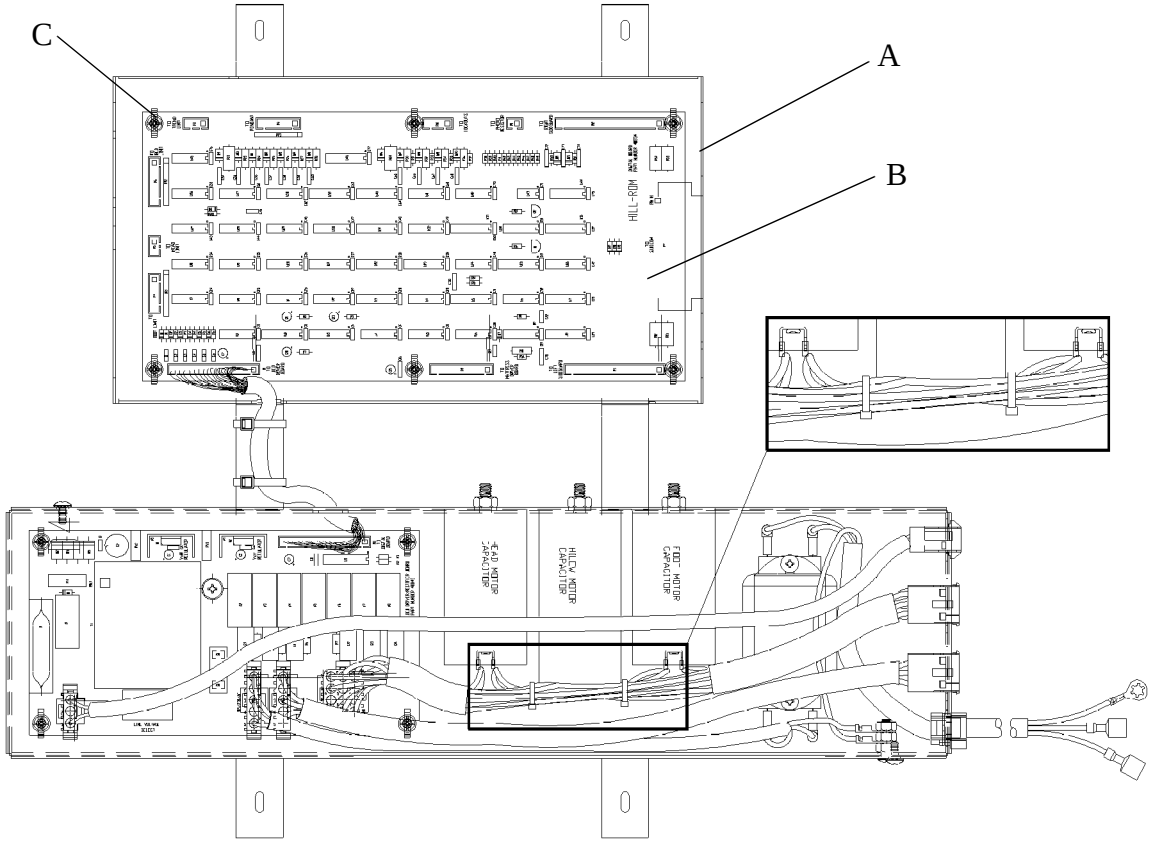
Removal

1. Set the brake/steer pedal to the brake position.
2. Ensure the bed is out of the Trendelenburg position.
3. Raise the head section to the high position using the head function.

SHOCK HAZARD:
Unplug the unit from its power source. Failure to do so could result in personal injury or equipment damage.

4. Unplug the bed from its power source.
5. Using a phillips head screwdriver, remove the screws securing the top motor cover.
6. Remove the top motor cover from the bed.
7. Remove the cover from the digital control board enclosure (A) (see figure 4-25 on page 4-64).

Figure 4-25. Digital Board location



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8. Identify and disconnect the wiring connectors from the digital control board (B).

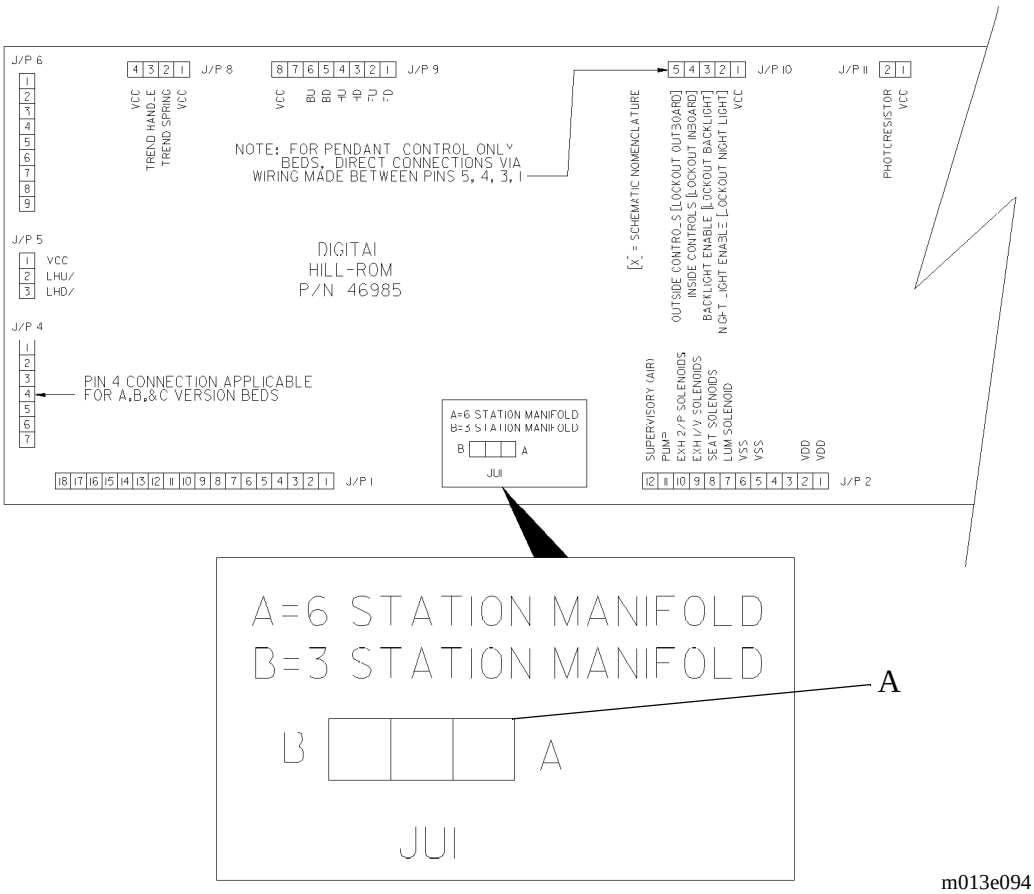
9. Using needle nose pliers, compress the digital control board's mounting clips (C).

10. Maneuver and remove the circuit board from the housing.

CAUTION:
Use care when handling the digital control board (PC board). Handle PC boards by their edge. Do not touch the components on the board. This should prevent unnecessary static damage to the components.

11. Ensure that jumper JU1 (A) is in the correct position for your bed model (see figure 4-26 on page 4-65):

Figure 4-26. JU1 Location



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- On the old style bed (six station manifold), the jumper needs to be on “B”.
- On the new style bed (three station manifold), the jumper needs to be on “A”.

Replacement

1. Install the new digital control board by reversing the removal procedures.
2. Ensure that the wiring connectors are firmly connected to the circuit board receptacles.
3. Install the cover on the digital control board enclosure.
4. Install the top motor cover over the drive system.
5. Ensure that all bed functions work properly.

Adjustment

No adjustments are required for the digital control board.

4.20 Fuses

Tools required: Phillips head screwdriver

Three fuses protect the high voltage circuit. Two fuses are located in the fuse holders secured to the head end of the main frame (line voltage fuses). One fuse is located on the bed drive and rectifier circuit board.

Line Voltage Fuses

CAUTION:
Adhere to all electrical safety precautions when servicing the bed's electrical system. Equipment damage could occur.

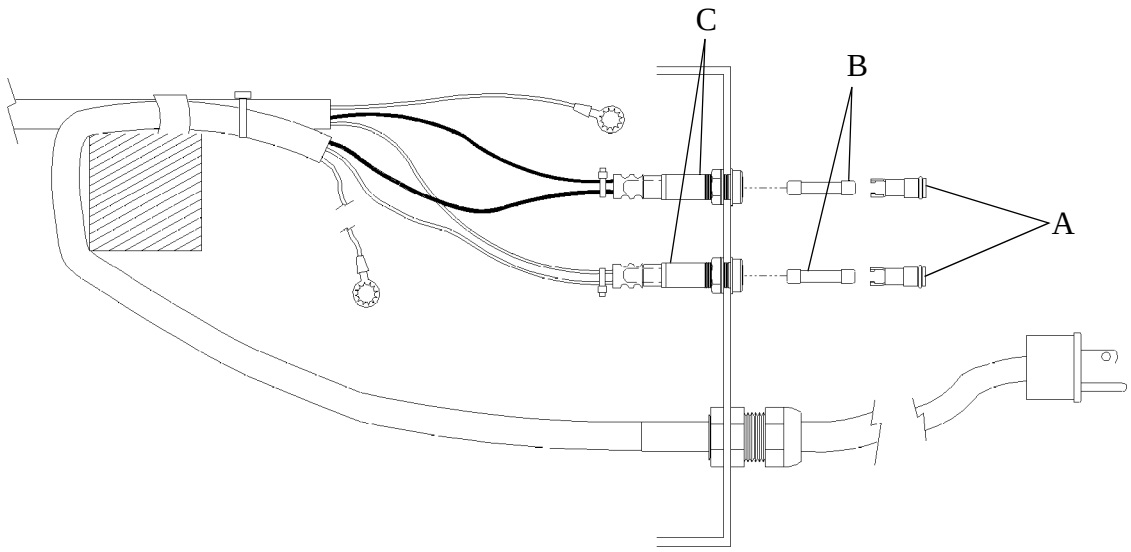
Removal

SHOCK HAZARD:
Unplug the unit from its power source. Failure to do so could result in personal injury or equipment damage.

1. Unplug the bed from its power source.

2. Push in and turn the fuse cap (A) counterclockwise (see figure 4-27 on page 4-67).

Figure 4-27. Line Voltage Fuse Location



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3. Using a standard head screwdriver, remove the fuse cap.
4. Remove the line voltage fuse (B) from the fuse housing (C).

Replacement

1. Insert a serviceable fuse into its holder.
2. Position the fuse cap over the fuse.
3. Push inward and turn clockwise to secure.

Bed Drive and Rectifier Circuit Board Fuses

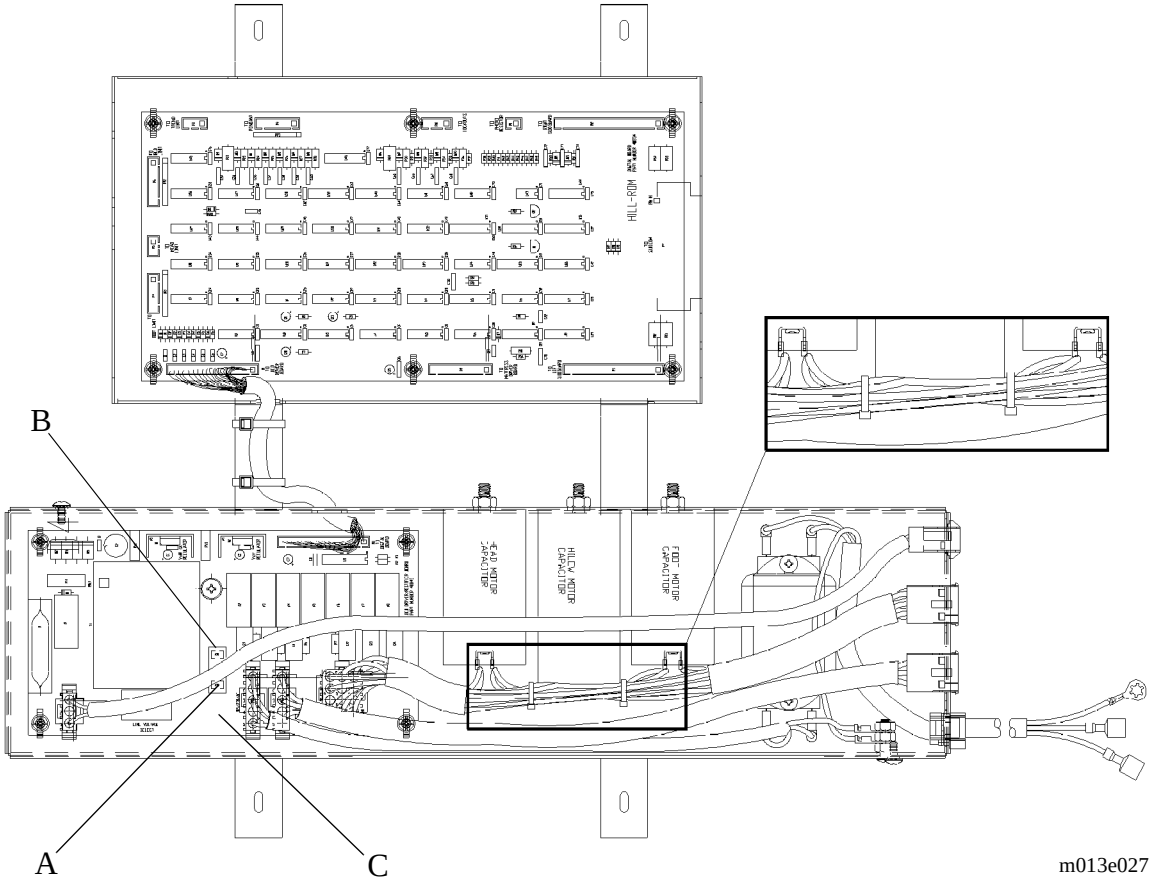
Removal

1. Set the brake/steer pedal to the brake position.
2. Ensure the bed is out of the Trendelenburg position.
3. Raise the head section to the high position using the head function.

SHOCK HAZARD:
Unplug the unit from its power source. Failure to do so could result in personal injury or equipment damage.

4. Unplug the bed from its power source.
5. Using a phillips head screwdriver, remove the screws securing the top motor cover.
6. Remove the top motor cover from the bed.
7. Remove the cover from the enclosure for the bed drive and rectifier board.
8. Locate the high voltage fuse (A) on the bed drive and rectifier circuit board (C) (see figure 4-28 on page 4-69).

Figure 4-28. Bed Drive and Rectifier Circuit Board Fuse Location



9. Remove the fuse (A) from the fuse bracket (B).

Replacement

1. Insert a new fuse (A) into the fuse bracket (B).
2. Press the fuse into place.
3. Install the cover on the enclosure for the bed drive and rectifier board.
4. Install the top motor cover over the drive systems.
5. Ensure that all bed functions work properly.

Adjustment

1. No adjustments are required for fuses.

4.21 Transformer—230V Systems Only

Tools required: Phillips head screwdriver, Needle nose pliers, Standard head screwdriver

The 230 volt electrical system contains a transformer. This transformer is located in the main frame assembly, beneath the top motor cover.

Removal

1. Set the brake/steer pedal to the brake position.
2. Ensure the bed is out of the Trendelenburg position.
3. Raise the head section to the high position using the head function.

SHOCK HAZARD:
Unplug the unit from its power source. Failure to do so could result in personal injury or equipment damage.

4. Unplug the bed from its power source.
5. Using a phillips head screwdriver, remove the screws securing the top motor cover.
6. Remove the top motor cover from the bed.
7. Carefully identify the terminal connectors for the wiring.
8. Disconnect the wiring at the transformer assembly.
9. Remove the transformer mounting bolts.
10. Remove the transformer from the bed.

Replacement

1. Reverse the removal procedure to install the replacement 230 volt transformer.
2. Ensure the terminal connections are connected properly.
3. Ensure that all bed functions work properly.

4.22 Bed Surface Air System (Old Style)

Tools required: Phillips head screwdriver (2) 1/2" wrenches

WARNING:
When servicing the air system, it is important to ensure that the lumbar and seat inflate/deflate hoses are connected to the correct fittings on the air package. The hose from the left side of the bed is the lumbar inflate/deflate hose and connects to the lowest fitting on the air system. The right side hose is the seat inflate/deflate hose and connects to the upper fitting on the air system.

Removal

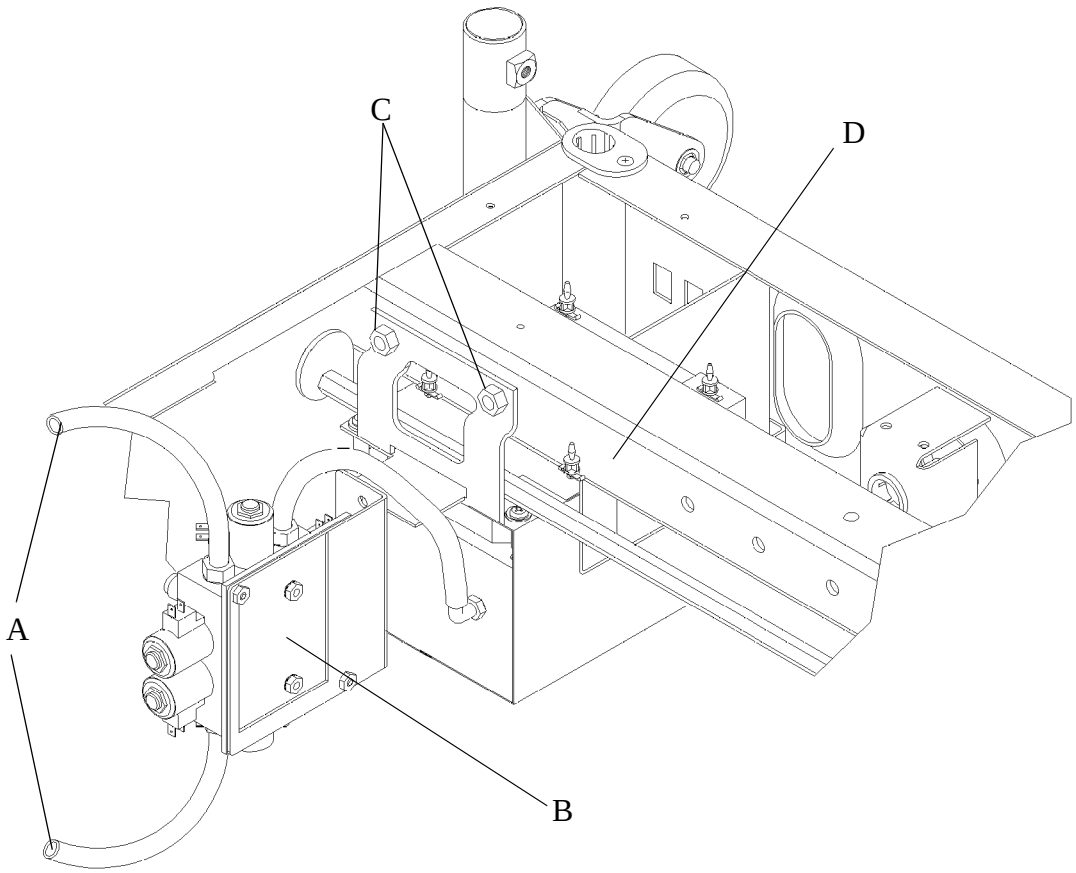
1. Set the brake/steer pedal to the brake position.
2. Ensure the bed is out of the Trendelenburg position.
3. Raise the head section to the high position using the head function.

SHOCK HAZARD:
Unplug the unit from its power source. Failure to do so could result in personal injury or equipment damage.

4. Unplug the bed from its power source.
5. Using a phillips head screwdriver, remove the screws securing the top motor cover.
6. Remove the top motor cover from the bed.
7. Remove the bottom motor cover.
8. Remove the cover from the enclosure for the digital board, bed drive and rectifier board.
9. Disconnect the cable connector for the mattress drive circuit board (air system) that leads from the digital control board.
10. Disconnect the mattress power cable assembly that connects the high voltage (from the bed drive and rectifier board) to the mattress drive circuit board.

11. Disconnect the two hoses (A) from the air manifold assembly (B) that lead to the mattress (see figure 4-29 on page 4-72).

Figure 4-29. Air System Assembly



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12. Remove the two nuts (C) that fasten the air system assembly (B) to the main frame (D) of the bed.

13. Remove the entire assembly from the bed.

Replacement

1. Reverse the removal procedure to install the replacement air system.

2. Ensure that all air system functions work properly.

4.23 Air System Manifold, Valve and Solenoid (Old Style)

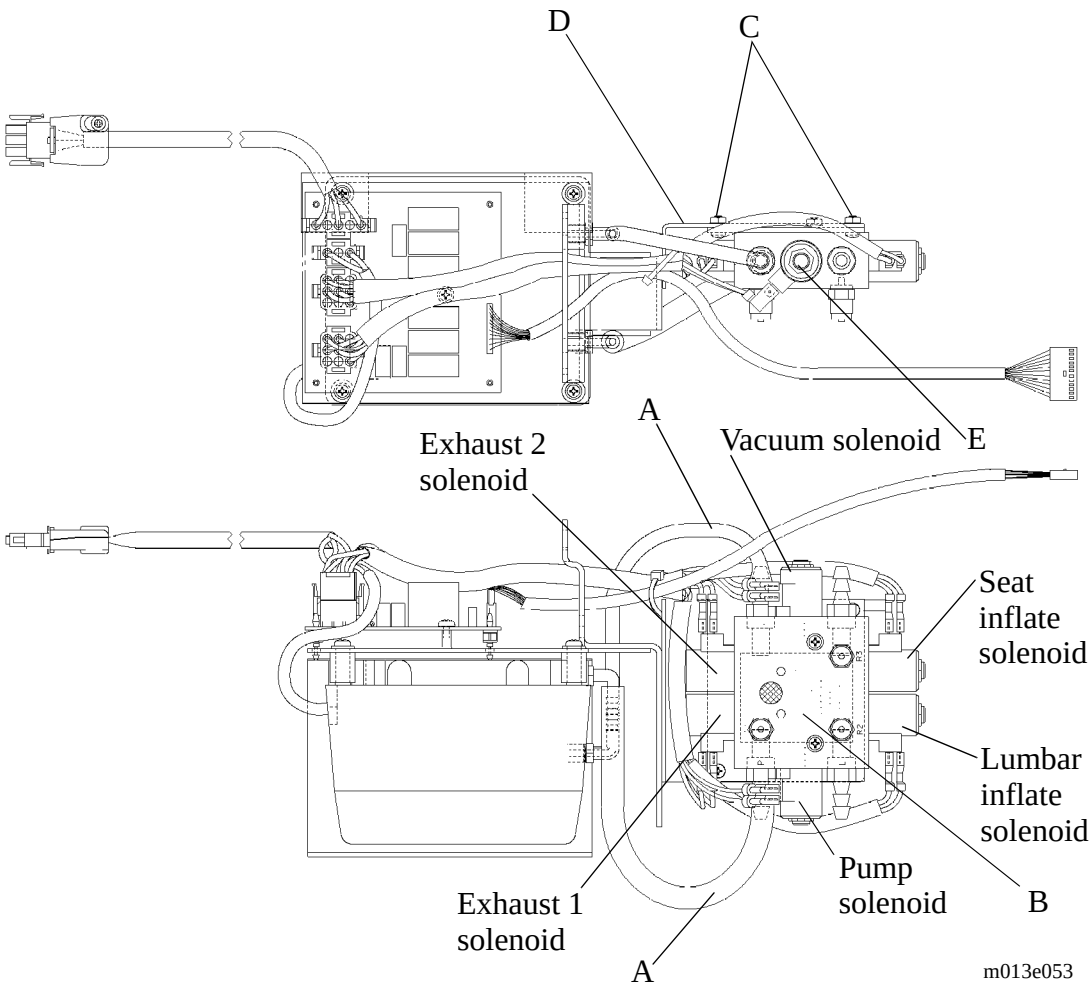
Tools required: Phillips head screwdriver
1/2" wrenches
Pliers
Valve removal tool

Removal

1. Remove the air system assembly as instructed under section “Bed Surface Air System (Old Style)” on page 4-71.

2. Disconnect hoses (A) from the manifold (B) (see figure 4-30 on page 4-73).

Figure 4-30. Air System Assembly



3. Identify and disconnect the wiring connectors from the manifold solenoids.

NOTE:
Always connect the white wire to the bottom solenoid terminal (located nearest the manifold).

4. Using a phillips head screwdriver, remove the two screws and nuts (C) that secure the manifold (B) to its mounting plate (D).

5. To remove the solenoids from the manifold assembly, follow steps 6 through 7.

6. Remove the hex nut (E) from the solenoid.

7. Remove the solenoid from the manifold assembly (B).

8. To remove a valve from the manifold assembly, follow steps 9 through 10.

9. Using a valve removal tool, unscrew the valve from the manifold.

10. Be sure not to drop any of the valve components during disassembly.

Replacement

1. Reverse the removal procedure to install the replacement air system manifold, valve and solenoid.

2. Ensure that all air system functions work properly.

4.24 Bed Surface Air System (New Style)

Tools required: Phillips head screwdriver
(2) 1/2" wrenches

NOTE:
When servicing the air system, it is important to ensure that the lumbar and seat inflate/deflate hoses are connected to the correct fittings on the air package. The hose from the left side of the bed is the lumbar inflate/deflate hose. The right side hose is the seat inflate/deflate hose.

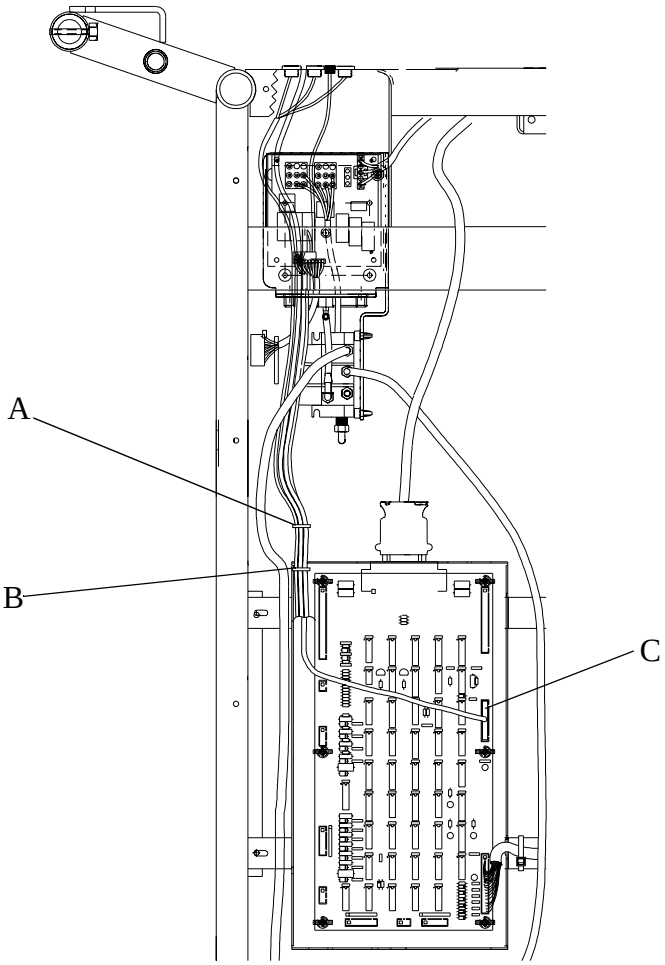
Removal

1. Set the brake/steer pedal to the brake position.
2. Ensure the bed is out of the Trendelenburg position.
3. Raise the bed to the high position using the hilow function.
4. Raise the head section to the high position using the head function.

SHOCK HAZARD:
Unplug the unit from its power source. Failure to do so could result in personal injury or equipment damage.

5. Unplug the bed from its power source.
6. Using a phillips head screwdriver, remove the screws securing the top motor cover.
7. Remove the top motor cover from the bed.
8. Remove the bottom motor cover.
9. Remove the cover from the enclosure for the digital board, bed drive and rectifier board.
10. Cut and remove both cable ties (A) and (B) (see figure 4-31 on page 4-76).

Figure 4-31. Mattress Board and Digital Control Board Connections



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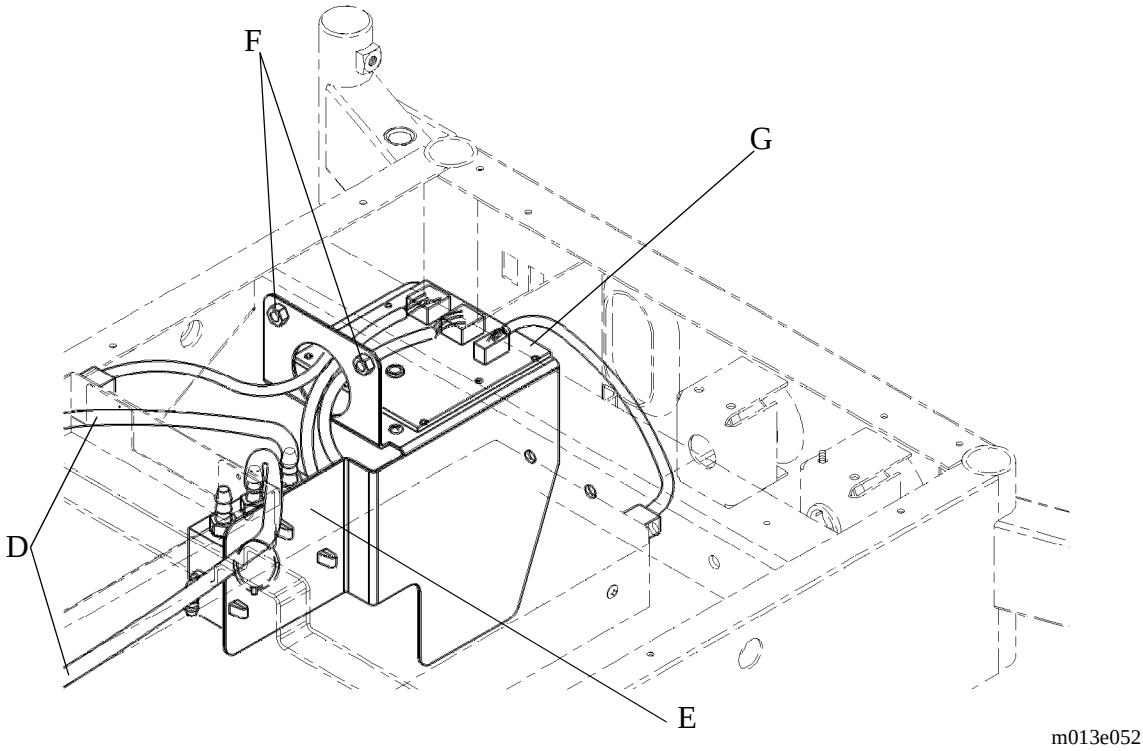
11. Disconnect the connector (C) at the digital circuit board.

12. Disconnect the mattress power cable assembly that connects the high voltage (from the bed drive and rectifier board) to the mattress drive circuit board.

13. Disconnect the two hoses (D) from the air manifold assembly (E) that lead to the mattress (see figure 4-32 on page 4-77).

Figure 4-32. Air System Assembly (New Style)



14. Using a wrench, remove the two nuts (F) that fasten the air system assembly (G) to the main frame.

15. Remove the entire air assembly (G) from the bed.

Replacement

1. Reverse the removal procedure to install the replacement air system.

2. Ensure that all air system functions work properly.

4.25 Air System Manifold (New Style)

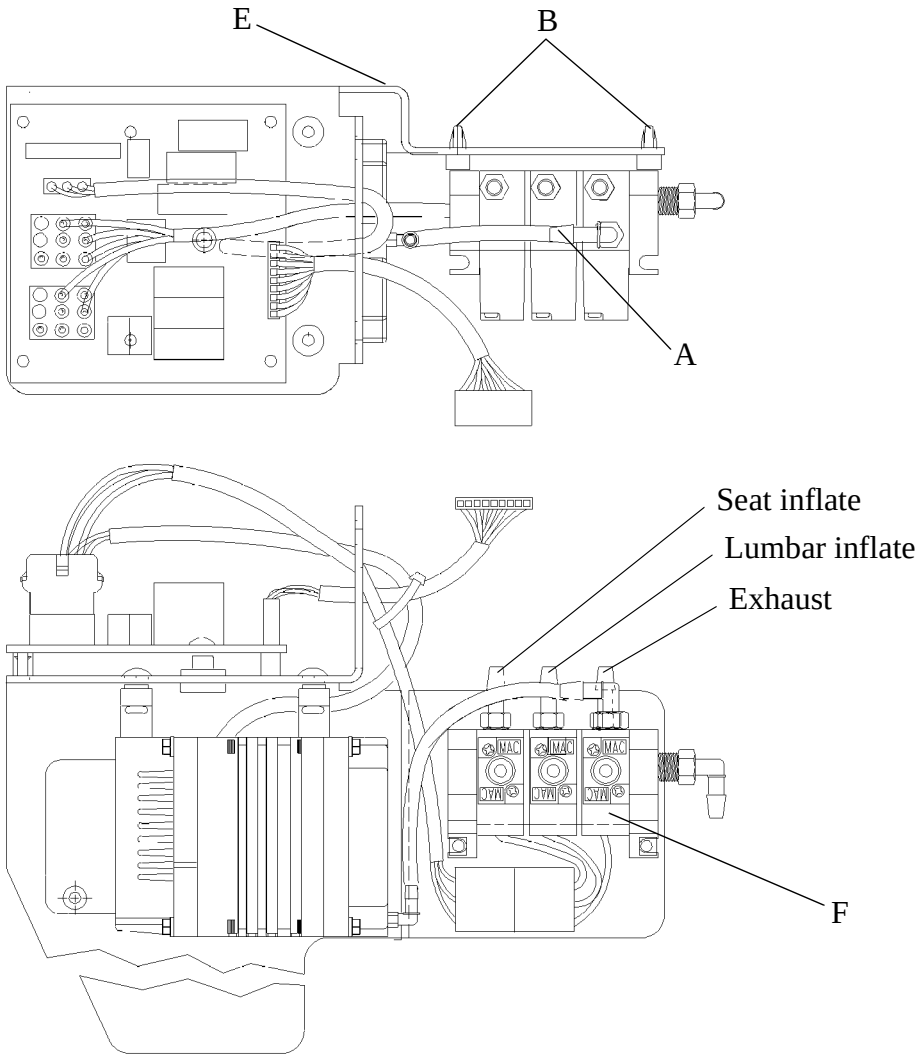
Tools required: (2) 1/2" wrenches

Removal

1. Remove the air system assembly. See “Bed Surface Air System (New Style)” on page 4-75

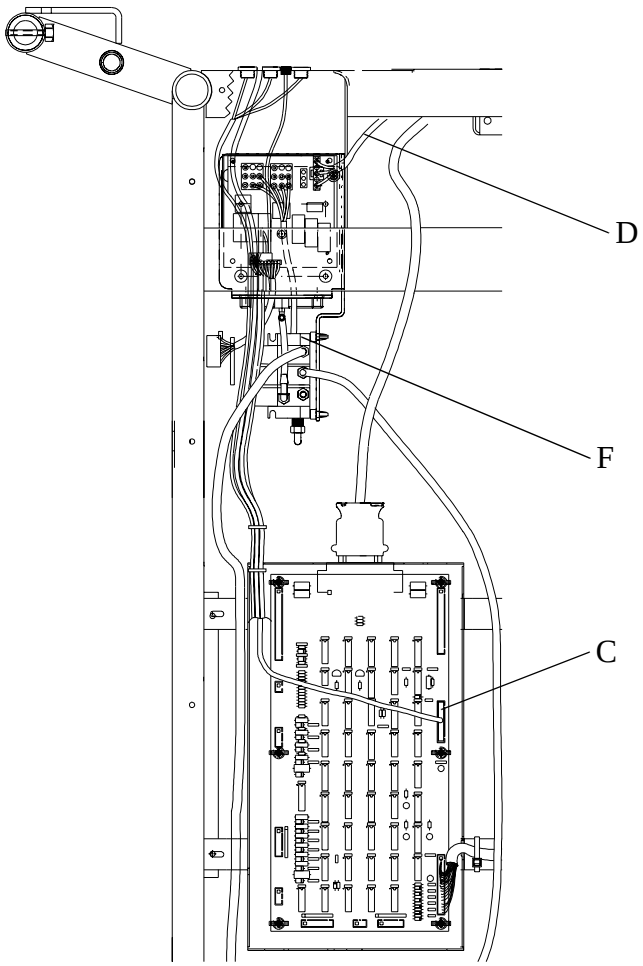
2. Disconnect hoses (A) from the manifold assembly (F) (see figure 4-33 on page 4-78).

Figure 4-33. Air System Manifold Connections



3. Identify and disconnect the wiring connectors (C) and (D) from the manifold assembly (G) (see figure 4-34 on page 4-79).

Figure 4-34. Mattress Board and Digital Control Board Connections



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4. Using a wrench, remove the two screws and nuts (B) that secure the manifold to its mounting plate (E).

Replacement

1. Reverse the removal procedure to install the replacement the air system manifold.

2. Ensure that all air system functions work properly.

4.26 Siderail Attendant (Outboard) and Patient (Inboard) Switch Assembly

Tools required: Phillips head screwdriver
Pliers
#8 self-drilling screw(s)
Siderail plugs—8 per rail

Attendant Switch Assembly

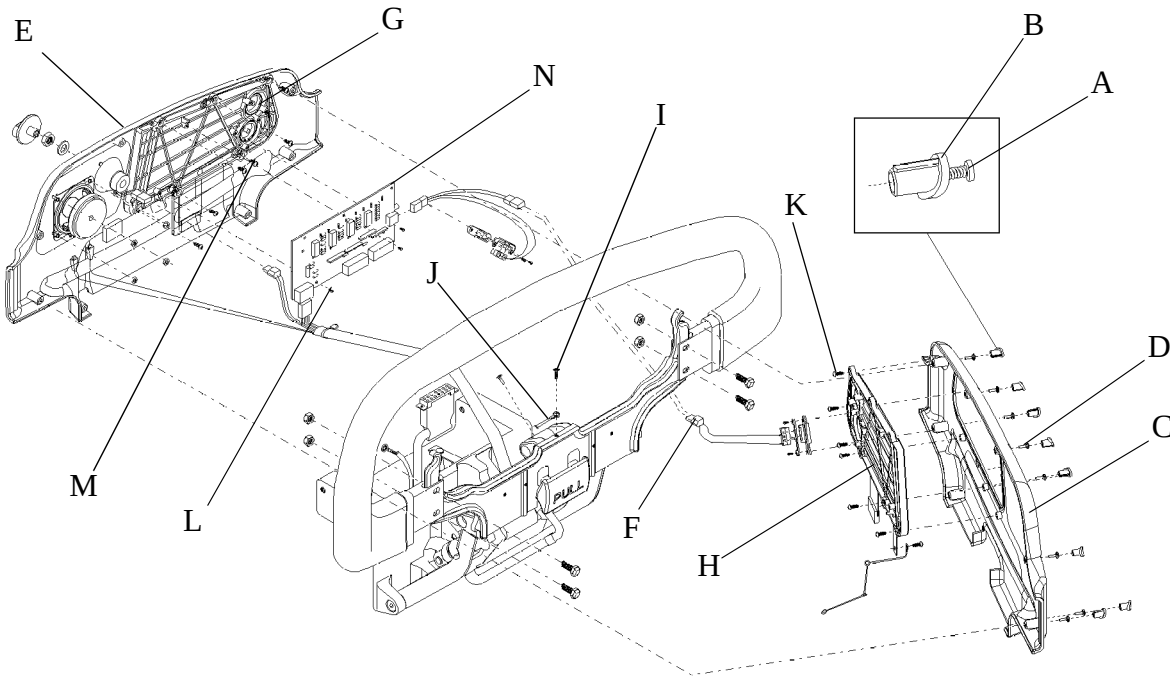
Removal

1. Set the brake/steer pedal to the brake position.
2. Ensure the bed is out of the Trendelenburg position.
3. Raise the bed to the high position using the hilow function.
4. Raise the head section to the high position using the head function.

SHOCK HAZARD:
Unplug the unit from its power source. Failure to do so could result in personal injury or equipment damage.

5. Unplug the bed from its power source.
6. Remove the plugs that cover the screws securing the outer shroud.
7. Using a self-drilling #8 screw (A), insert the screw into the center of the plug (B) (see figure 4-35 on page 4-81).

Figure 4-35. Siderail Attendant (Outboard) and Patient (Inboard) Switch Assembly



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8. Thread self-drilling screw it into the plug until it is firmly gripped by the screw.

9. Using a pair of pliers, pull the screw and plug **straight out** from the shroud (C).

CAUTION:
Do not attempt to twist or pry the plug from the shroud. Possible damage to the shroud could occur.

10. Repeat steps 8 and 9 to remove all eight plugs from the shroud.

11. Using a phillips head screwdriver, remove the eight screws (D) that fasten the inner (E) and outer (C) shrouds together.

12. Carefully pull the outer shroud (C) away from the siderail to separate the two shrouds.

13. Disconnect the two connectors (F) located between the patient (inner) (G) and attendant (outer) (H) switch packages.

14. Using a phillips head screwdriver, remove the ground screw (I) and disconnect the ground wire (J) from the inner and outer shroud assemblies.

15. Using a phillips head screwdriver, remove the screws and switch assemblies that are attached to the back of the attendant switch package (H).

16. Using a phillips head screwdriver, remove the six screws (K) that fasten the attendant switch package (H) to the outer shroud (C).

Replacement

1. Reverse the removal procedures to install the replacement switch package.

2. Using a phillips head screwdriver and screw (I), ensure that the ground wire (J) is secured correctly to the inner and outer shrouds with screw.

3. Ensure that the shroud gasket is installed.

4. Use masking tape to hold the gasket in place during assembly.

5. Ensure that all siderail functions work properly.

Patient Switch Assembly

Removal

1. Perform steps 1 through 14 as instructed in section “Siderail Attendant (Outboard) and Patient (Inboard) Switch Assembly” on page 4-80.

2. Disconnect the wiring from the circuit board assembly.

3. Using a phillips head screwdriver, remove the three screws (L) that secure the circuit board to the inner shroud assembly (E).

4. Remove the siderail circuit board (N).

CAUTION:
Use care when handling the circuit board (PC board). Handle PC boards by their edge. Do not touch the components on the circuit board. Possible static damage to the PC board could occur

5. Using a phillips head screwdriver, remove the screws and switch assemblies attached to the back of the patient (inboard) switch package (G).

6. Using a phillips head screwdriver, remove the six screws (M) that secure the patient switch package (G) to the inner shroud (E).

Replacement

1. Reverse the removal procedure to install the replacement patient switch package.

2. Ensure that the circuit board is handled with care to prevent damage.

3. Ensure that all siderail functions work properly.

4.27 Siderail Circuit Board

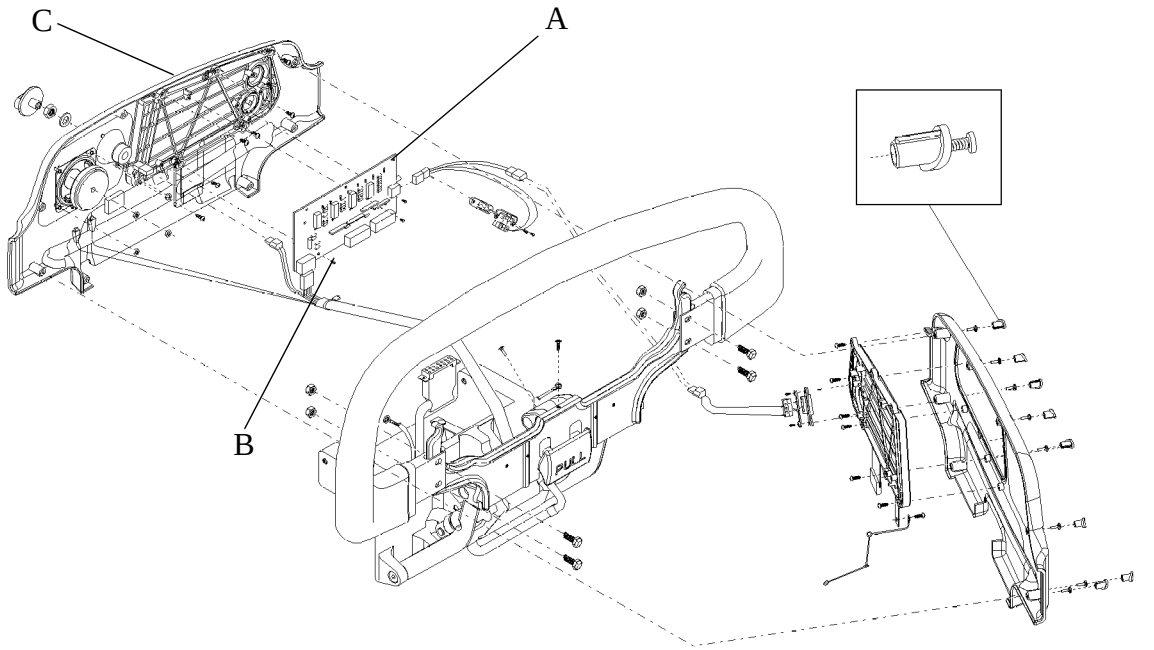
Tools required: Phillips head screwdriver
Pliers
#8 Self-drilling screw(s)
Siderail plugs—8 per rail

Removal

1. Perform steps 1 through 14 as instructed in section “Siderail Attendant (Outboard) and Patient (Inboard) Switch Assembly” on page 4-80.

2. Disconnect the wiring from the circuit board assembly (A) (see figure 4-36 on page 4-84).

Figure 4-36. Siderail Circuit Board Location



3. Using a phillips head screwdriver, remove the three screws (B) that secure the circuit board (A) to the inner shroud assembly (C).

4. Remove the circuit board (A).

CAUTION:
Use care when handling the circuit board (PC). Handle PC boards by their edge. Do not touch the components on the board. Possible static damage to the components could occur.

Replacement

1. Reverse the removal procedure to install the replacement circuit board assembly.

CAUTION:
Ensure the circuit board is handled with care. Possible damage to the components could occur

2. Ensure that all siderail functions work properly.

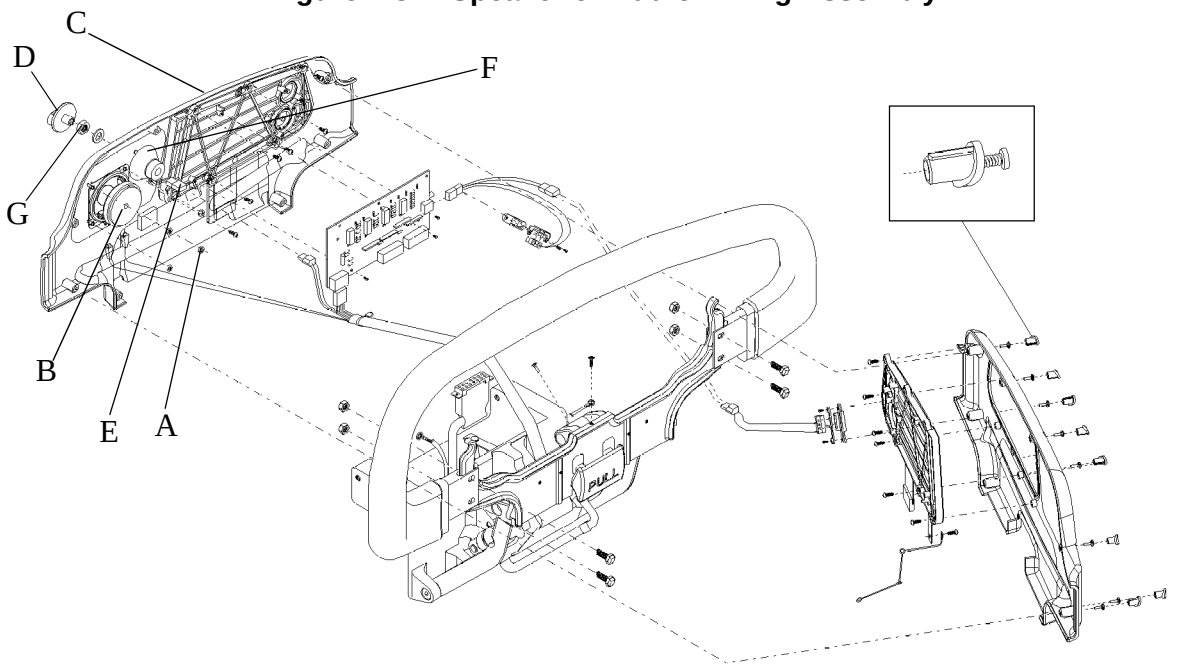
4.28 Speaker or Audio Wiring Assembly

Tools required: Phillips head screwdriver
Pliers
#8 Self-drilling screw(s)
Siderail plugs - 8 per rail
Standard head screwdrivers (small)

Removal

1. Perform steps 1 through 14 as instructed in section “Siderail Attendant (Outboard) and Patient (Inboard) Switch Assembly” on page 4-80.
2. Remove the speaker.
3. Disconnect the wire from the cable assembly.
4. Remove the four nuts (A) which fasten the speaker (B) to the inner shroud assembly (C) (see figure 4-37 on page 4-86).

Figure 4-37. Speaker or Audio Wiring Assembly



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5. Remove the volume knob and audio wiring assembly.

6. Using two small standard head screwdrivers, insert the heads of the screwdrivers between the volume knob (D) and the inner shroud assembly (C).

7. Carefully pry the knob straight up and off of the shaft.

8. Disconnect the wire (E) from the audio wiring assembly (F).

9. Using a wrench, remove the hex nut (G) that connects the audio wiring assembly (F) to the inner shroud assembly (C).

10. Remove the audio wiring assembly (F).

Replacement

1. Reverse the removal procedure to install the replacement speaker or audio wiring assembly.

CAUTION:
Ensure that the circuit board is handled with care. Possible damage to the components could occur.

2. Ensure that all functions of the siderail assembly work properly.

4.29 Top Rail Assembly

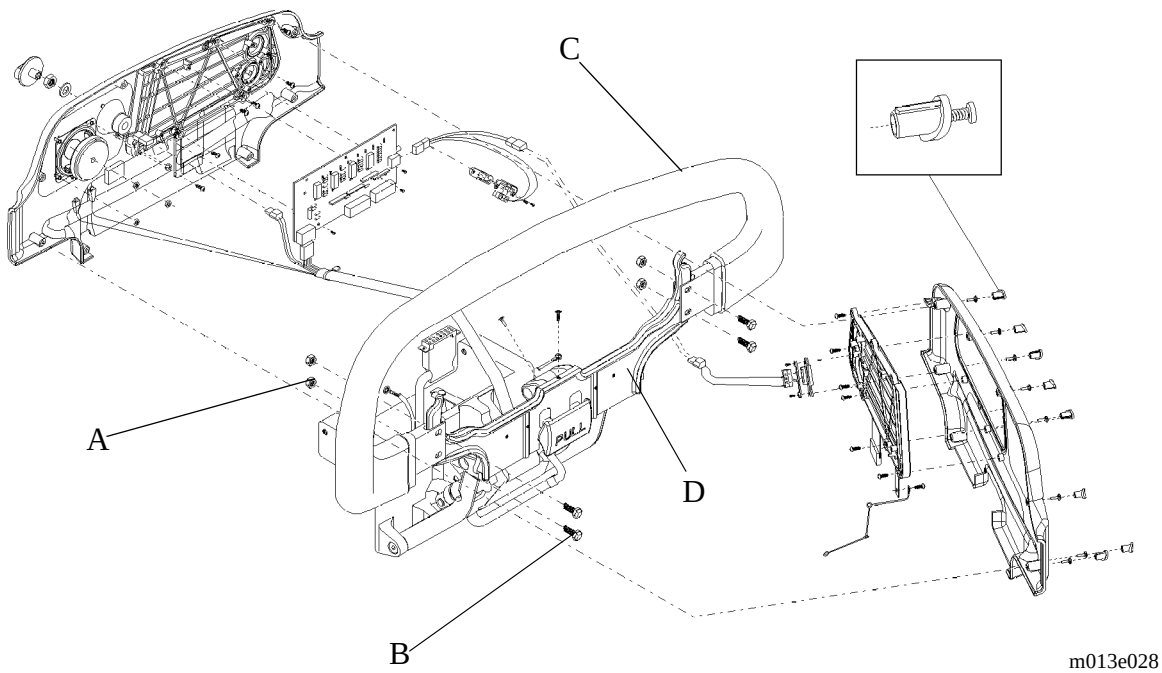
Tools required: Phillips head screwdriver
Pliers
#8 self-drilling screw(s)
7/16" wrench
Siderail plugs - 8 per rail

Removal

1. Perform steps 1 through 14 as instructed in section “Siderail Attendant (Outboard) and Patient (Inboard) Switch Assembly” on page 4-80.

2. Using two 7/16" wrenches, remove the nuts (A) and bolts (B) that secure the top rail (C) to the siderail frame (D) (see figure 4-38 on page 4-88).

Figure 4-38. Top Rail Assembly



Replacement

1. Reverse the removal procedure to install the replacement top rail.

CAUTION:
Ensure that the circuit board is handled with care during installation of the top rail. Equipment damage could occur.

2. Ensure the top rail is installed with the sloping portion of the rail positioned toward the foot end of the bed.

3. Ensure that all siderail functions work properly.

4.30 Siderail Assembly

Tools required: Phillips head screwdriver
7/16" wrench
Standard head screwdriver (small)
1/2" wrench

Removal

1. Set the brake/steer pedal to the brake position.

2. Ensure the bed is out of the Trendelenburg position.

1. Raise the head section to the high position using the head function.

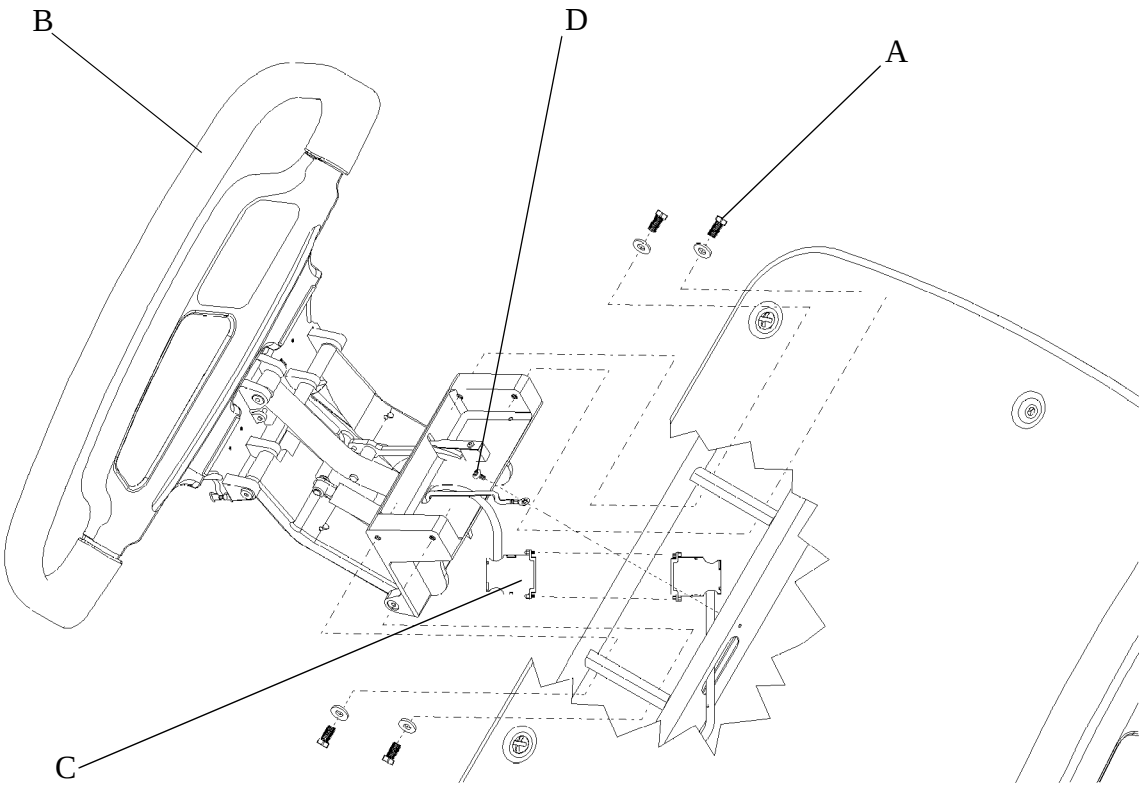
SHOCK HAZARD:
Unplug the unit from its power source. Failure to do so could result in personal injury or equipment damage.

2. Unplug the bed from its power source.

CAUTION:
Support the siderail during the removal procedure. Equipment damage could occur.

3. Using a wrench, remove the four bolts (A) that secure the siderail assembly (B) to the bed (see figure 4-39 on page 4-91).

Figure 4-39. Siderail Assembly



CAUTION:
Ensure the siderail does not drop when the bolts are removed. Possible equipment damage to the cable wiring going to the siderail switch could occur.

4. Lower the siderail just enough to provide access to the cable wiring (C).
5. Disconnect the cable wiring (C) and the ground strap assembly screw (D).
6. Set the siderail in a place where it will not be damaged.

Replacement

1. Reverse the removal procedure to install the replacement siderail assembly.
2. Ensure that all siderail functions work properly.

4.31 Central Braking System

Tools required:

Phillips head screwdriver	1/8" drift punch
7/16" wrench	Blue Loctite #242
Hammer	1/2" wrench
E-ring removal tool	Anti-seize compound
Needle nose pliers	Marker pen

(2) pieces of 2" x 4" x 36" lumber
Standard head screwdriver (small)
Red Loctite #262

There are two different designs for the central braking system that may be encountered. One system is installed on the “A” version bed assemblies and the other is used on the “B”, “C”, “D”, and “E” version beds. Determine the version that applies to the bed being serviced. Foot pedals on the “A” version beds are offset toward the foot of the base frame (from the center cross member). Foot pedals on the “B”, “C”, “D”, and “E” version beds are in-line with the cross member of the base frame.

NOTE:
The brake/steer caster is located at the right hand head end of the base frame. The brake caster is located at the left hand foot end of the base frame. To service the central braking system mechanism block, lay the bed on its side. This requires the siderail to be secured and the brake/steer pedal to be removed.

Central Braking System Mechanism Block (Version “A”)

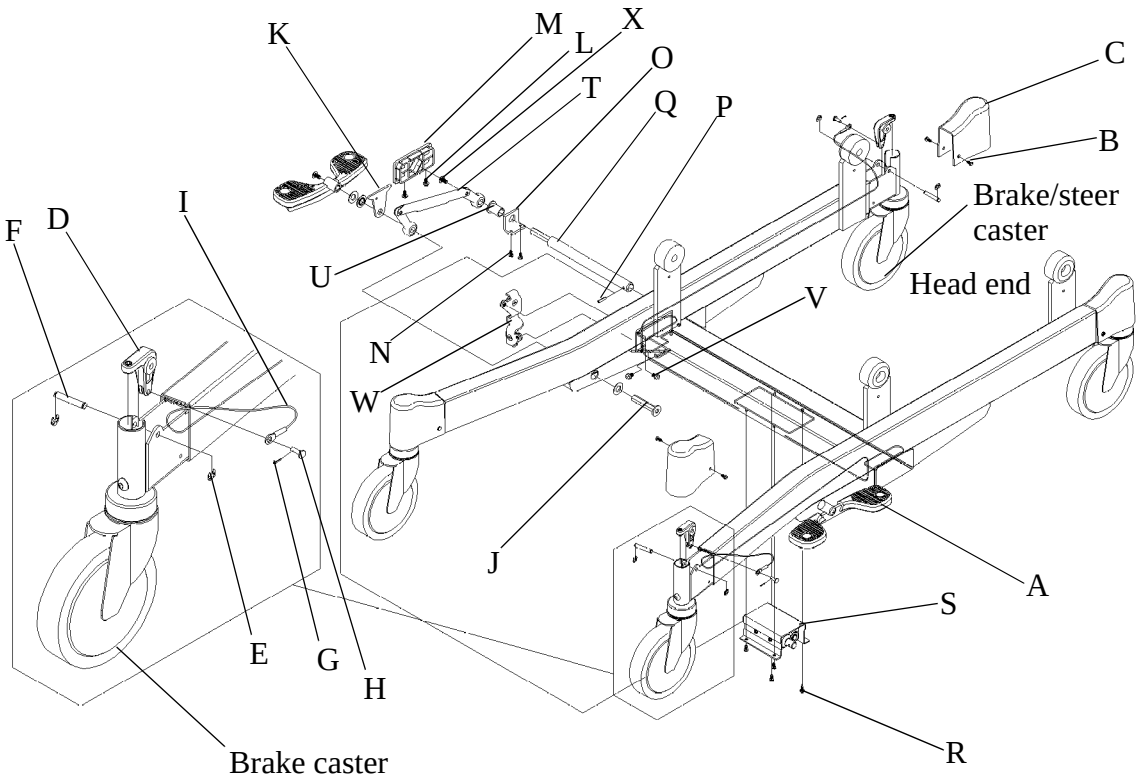
Removal

1. Determine on which side the bed is to be placed.

2. Secure the siderail by lowering it beneath the bed and tying it in this position, or removing it as an assembly from the bed.

3. Remove the brake/steer pedal (A) from the same side of the bed (see figure 4-40 on page 4-93).

Figure 4-40. Central Braking System Mechanism Block (Version "A")



m013e029

4. Place the brake/steer (foot) pedal in the steer position.

5. Using a phillips head screwdriver, remove the two screws (B) securing the leg covers (C) over the brake/steer and the brake casters.

6. Remove these covers (C).

7. Remove the rocker arm (D) located above the brake/steer caster **and** the brake caster by performing steps 8 through 13.

8. Remove the tru-arc ring (E) from one side of the groove pin (F) securing the rocker arm (D) above the caster.

9. Remove the groove pin (F) to free the rocker arm (D).

10. Remove the spacers on each side of the rocker arm.

11. Remove the cotter pin (G) and connector pin (H) that secures the cable (I) to the rocker arm (D).

12. Lift out and remove the rocker arm.

13. Repeat steps 8 through 13 for both rocker arms.

14. Place the brake/steer pedal to the neutral position.

15. Remove the remaining brake/steer pedal.

16. Remove the actuating pin (J), stop cam (K), and miscellaneous washers from both sides of the bed.

17. Remove the headboard and the foot section from the bed.

18. Place pads on the floor to protect the bed from damage.

19. Carefully turn the bed onto the side that has the siderail assembly secured.

20. Using a phillips head screwdriver, remove the two screws (L) from the end caps (M) covering the cross tube at both sides of the base frame.

21. Remove the end caps.

22. Remove the two screws (N) from the brake rod support bracket (O) on each side of the base frame.

23. Remove the roll pin (P) from both brake rods (Q) in the center of the base frame.

24. Remove the four screws (R), which fasten the mechanism block assembly (S) to the center channel of the base frame.

25. Remove the screw (X) from the end of the brake rod (Q) on both sides of the base frame.

26. Using a black marker, place aligning marks on the hex end of the brake rod (Q) and hex in the brake link. The aligning marks are to ensure proper timing of the brake mechanism during assembly.

27. Remove the brake rods (Q) from the mechanism block (S) at the center of the bed.

28. Maneuver the brake rods (Q) and mechanism block (S) to enable the brake link assembly (T) to be removed from the end of the brake rod (Q).

29. Remove the brake rods (Q), support brackets (O), and base bushing (U). Observe the brake rods are different for the right and left sides of the base frame.

NOTE:
It is important to identify the right and left brake rods. They must not be assembled on the wrong side. Use a marker to ensure identity.

NOTE:
The links on the link assembly have two different lengths; the longer link is to connect to the brake pedal.

30. Remove the mechanism block assembly (S) by performing steps 31 through 33.

31. Remove the two hex nuts (V) that connect the pulley brackets (W) to the base frame.

32. Remove the pulley brackets (W) while observing the routing of the brake cables.

33. Remove the mechanism block assembly (S).

Replacement

1. Reverse the removal procedure to install the replacement central braking system mechanism block **with attention to the following**:
   a. Ensure that the right and left brake rods are correctly assembled on their respective sides.
   b. Ensure the aligning marks on the hex end of the brake rod and the hex in the brake link are properly aligned to ensure correct timing of the brake mechanism.
   c. Complete the steps outlined in sections “Brake and Steer Caster (Versions “A” and “B”)” on page 4-101 and “Brake Caster (Versions “A” and “B”)” on page 4-102.

2. Ensure all brake and steer functions work properly.

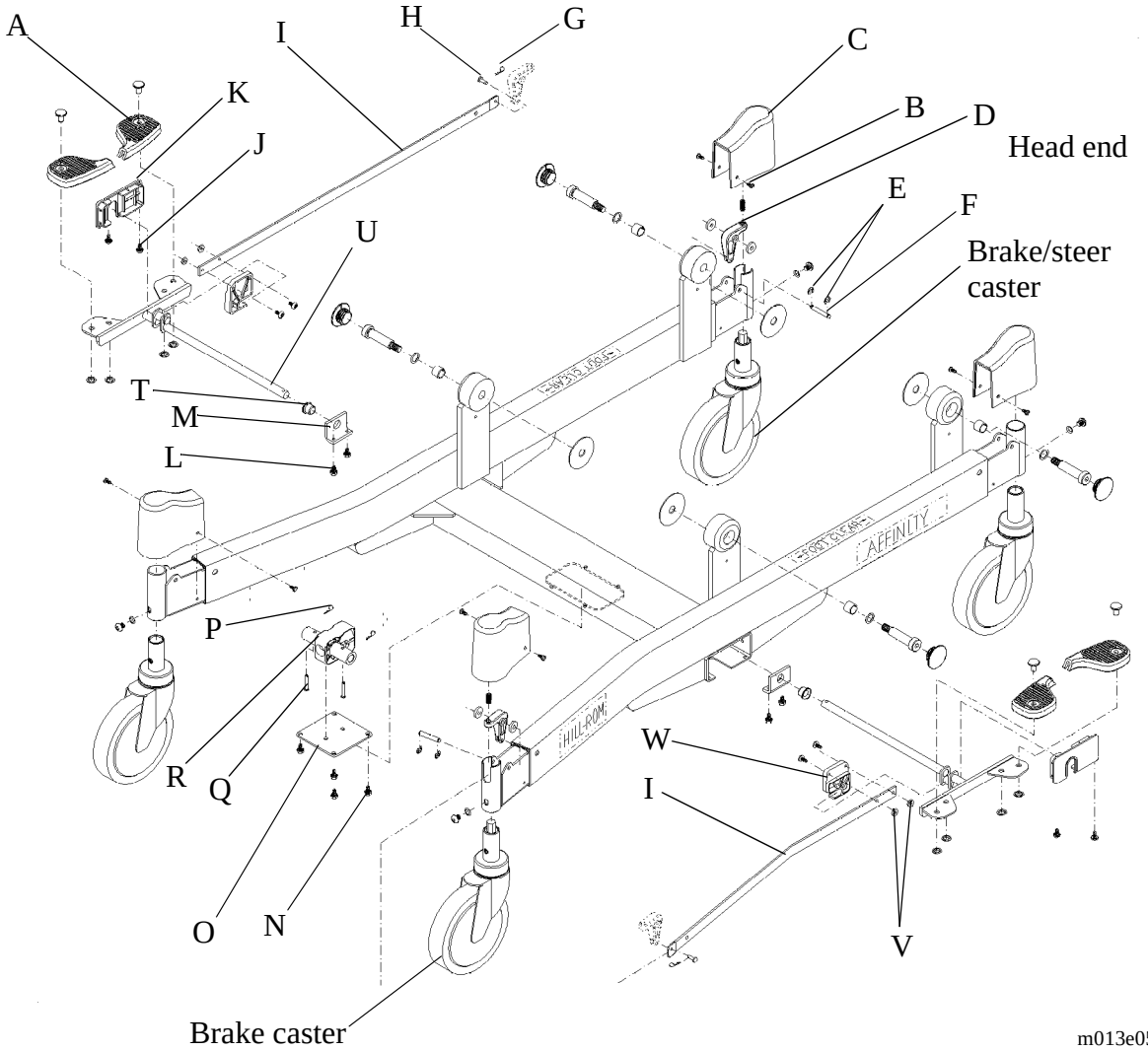
4

Central Braking System Mechanism Block (Version “B”, “C”, “D”, and “E”)

Removal

1. Determine on which side the bed is to be placed.
2. Secure the siderail by lowering it beneath the bed and tying it in this position, or removing it as an assembly from the bed.
3. Place the brake/steer (foot) pedal (A) into the steer position (see figure 4-41 on page 4-96).

Figure 4-41. Central Braking System Mechanism Block (Version “B”, “C”, “D”, and “E”)



4. Using a phillips head screwdriver, remove the two screws (B) securing the leg covers (C) over the brake/steer and brake casters.

5. Remove the leg covers (B).

6. Remove the rocker arm (D) located above the brake/steer caster **and** the brake caster by performing steps 7 through 12.

7. Remove the tru-arc ring (E) from one side of the groove pin (F) securing the rocker arm (D) above the caster.

8. Remove the groove pin (F) to free the rocker arm (D).

9. Remove the spacers on each side of the rocker arm.

10. Remove the hair pin (G) and connector pin (H) that secures the metal brake strip (I) to the rocker arm (D).

11. Lift out and remove the rocker arm (D).

12. Repeat the preceding steps for both rocker arms.

13. Place the brake/steer (foot) pedal into the neutral position.

14. Remove the headboard and the foot section from the bed.

15. Place the pads on the floor to protect the bed from damage.

16. Carefully turn the bed onto the side that has the siderail assembly secured.

17. Using a phillips head screwdriver, remove the two screws (J) and the end caps (K) covering the cross tube (behind the brake/steer pedal) at both sides of the base frame.

18. Using a phillips head screwdriver, remove the two screws (L) from the brake rod support bracket (M) on each side of the base frame.

19. Using a phillips head screwdriver, remove the four screws (N) securing the detent housing plate (O) at the center of the cross channel.

20. Remove the two hair pins (P) and clevis pins (Q) that connect the shaft of both the brake/steer pedals to the detent mechanism (R).

21. Rotate the brake/steer pedal to maneuver the cam portion of its shaft from the cam pivot.

22. Pull the brake pedal assembly free of the cross channel and detent mechanism block assembly (R).

23. Repeat step 21 and 22 for the opposite side.

24. Remove the detent mechanism block assembly (R) from the cross channel.

25. Slide the brake rod support (M) and bushing (T) from the end of the shaft (U).

26. Remove the brake strips (I) by performing steps 27 through

27. Using a phillips head screwdriver, remove the two screws (V), the locknuts, and the lockwashers that fasten the brake strips (I) to the cam pivot (W).

28. Remove the brake/steer strip (straight metal strap) and the brake strip (bent metal strap) from the base frame.

Replacement

1. Reverse the removal procedure to install the replacement central braking system mechanism block **with attention to the following**:
   a. Ensure the brake/steer strip (straight metal strap) and the brake strip (bent metal strap) are correctly assembled on their respective sides.
   b. Ensure that both of the brake strips (I) are correctly attached to the cam pivot.
   c. Complete the steps outlined in sections “Brake and Steer Caster (Versions “C”, “D”, and “E”)” on page 4-103 and “Brake Caster (Versions “C”, “D”, and “E”)” on page 4-104.
2. Ensure all brake and steer functions work properly.

4.32 Caster Assembly

Tools required: 5/32" allen wrench
5/16" wrench
Phillips head screwdriver
3/32" allen wrench

The bed has two casters that have a braking feature. One of these casters also has a steer feature. The brake/steer caster is located at the right side, head end of the bed (as determined by laying in the bed on your back). The brake (only) caster is located at the left side, foot end of the bed. These two casters may require adjustment after service, or because of normal wear. The other two casters are basic swivel-type casters and require no adjustments.

Placing the brake/steer pedal in steer locks the right side, head end caster into a position that is parallel to the bed (as described in chapter 3).

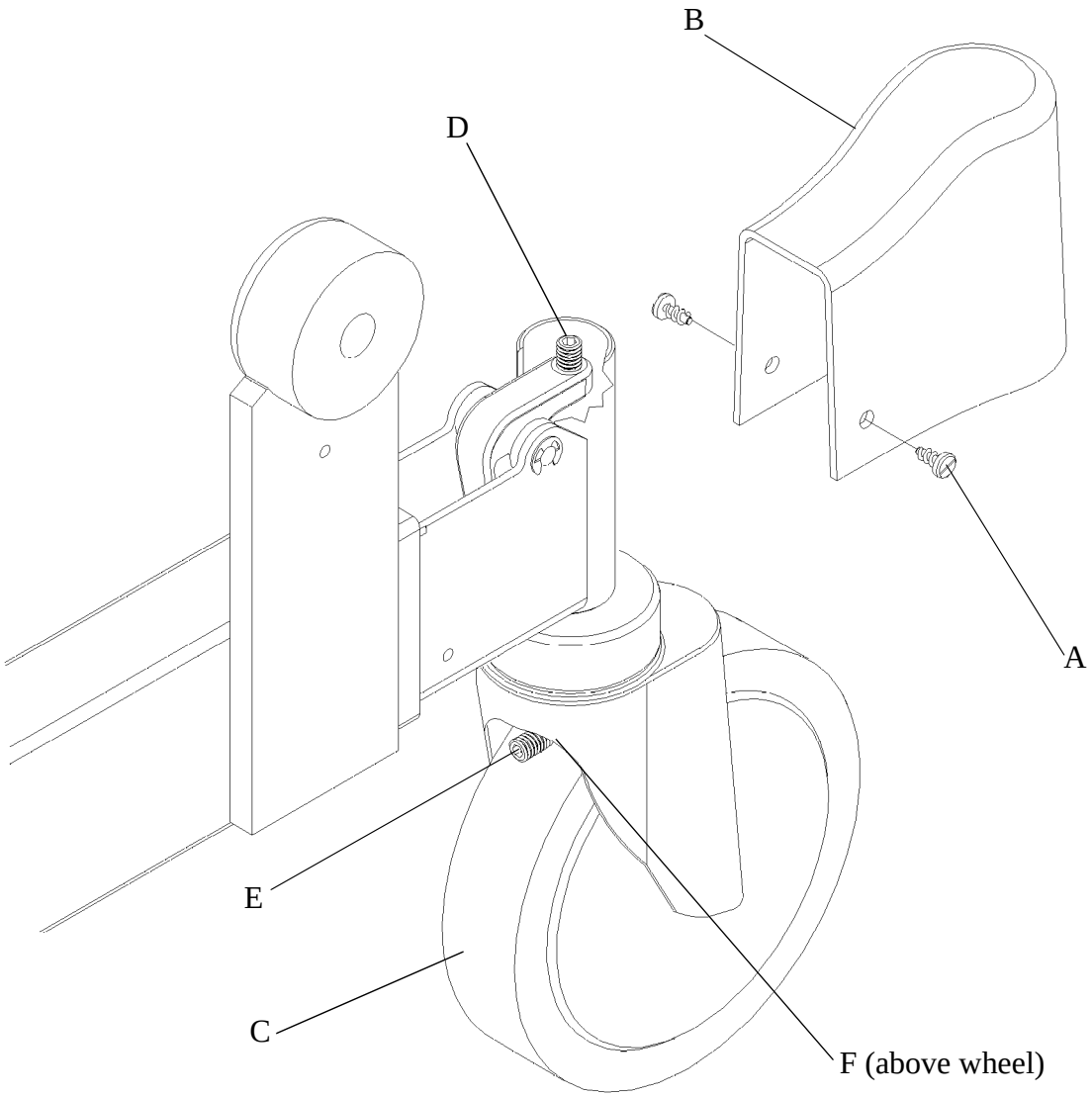
Two different designs for the casters may be encountered. One design is installed on “A” and “B” version bed assemblies and the other is used on “C”, “D”, and “E” version beds. See “Central Braking System” on page 4-92 for additional information.

Removal

1. Set the brake/steer pedal to the brake position.

2. Using a screwdriver, remove the two screws (A) securing the leg cover (B) over the caster (C) (see figure 4-42 on page 4-100).

Figure 4-42. Caster Assembly



3. Remove the leg cover.
4. Remove the caster mounting screw.
5. Place a jack under the base frame and raise the base frame high enough to remove the caster (C).

WARNING:
Ensure the bed is stable before removing the caster. Failure to do so could result in personal injury or equipment damage.

6. Remove the caster from the bed.

Replacement

1. Reverse the removal procedure to install the replacement caster.
2. Ensure the caster works properly.

Brake and Steer Caster (Versions “A” and “B”)

Adjustment

1. Perform steps 1 through 3 as instructed in the section “Caster Assembly” on page 4-99.
2. Using an allen wrench, tighten the setscrew (D) on the brake/steer caster.
3. Turn the setscrew (D) clockwise until the caster does not lock in steer.
4. Using an allen wrench, loosen the setscrew (D) (turn counterclockwise) 1/2-1 turn.
5. The caster should lock into a position parallel with the length of the bed when swiveled.
6. Place the brake/steer pedal in the neutral position.
7. The caster should swivel without ratcheting.
8. If ratcheting is heard, loosen the setscrew (D) slightly. This procedure will allow the caster to swivel without ratcheting).
9. Depress the brake/steer pedal to place the system in the brake position.
10. Ensure that the caster tire does not roll.
11. If the caster tire rolls, adjust the brake pad by performing steps 12 through 15.
12. Place the brake/steer pedal in the neutral position.

13. Locate the setscrew (E) and jam nut on the brake pad (F) (of the brake/steer caster).

14. Loosen the jam nut and turn the setscrew (E) clockwise until the caster brakes correctly.

15. Tighten the jam nut when the adjustment is correct.

NOTE:
If the brake still seems to slip, check the caster tread for wax buildup. Clean the tread with turpentine (if necessary).

16. Install the leg cover over the brake/steer caster and secure it with the two screws (A).

Brake Caster (Versions “A” and “B”)

Adjustment

1. Set the brake/steer pedal to place the brake system in neutral.

1. Perform steps 1 through 3 as instructed in the section “Caster Assembly” on page 4-99.

2. Swivel the brake caster about 2 inches from side-to-side, while tightening setscrew (D).

3. Turn the setscrew clockwise until a light ratcheting sound is heard.

4. Loosen setscrew (D) (turn counterclockwise) until the ratcheting stops.

5. Set the brake/steer pedal to place the system in the brake position.

6. Ensure that the caster tire does not roll.

7. If the caster tire rolls, adjust the brake pad by performing steps 8 through 11.

8. Place the brake/steer pedal in the neutral position.

9. Locate the setscrew (E) and jam nut on the brake pad (F) (of the brake/steer caster).

10. Loosen the jam nut and turn the setscrew (E) clockwise until the caster brakes correctly.

11. Tighten the jam nut when the adjustment is correct.

NOTE:
If brake still seems to slip, check the caster tread for wax buildup. Clean the tread with turpentine (if necessary).

12. Install the leg cover (B) over the brake caster and secure it with two screws (A).

13. Ensure that all caster and brake functions work properly.

Brake and Steer Caster (Versions “C”, “D”, and “E”)

Adjustment

1. Set the brake/steer pedal to place the system in neutral.

1. Perform steps 1 through 3 as instructed in the section “Caster Assembly” on page 4-99.

2. Swivel the caster about 2 inches from side-to-side while tightening setscrew (D).

3. Turn the setscrew clockwise until a light ratcheting sound is heard.

4. Loosen the setscrew (D) (turn counterclockwise) until the ratcheting stops.

5. Set the brake/steer pedal to place the system in the brake position.

6. Ensure that the caster tire does not roll.

7. If the caster tire rolls, the setscrew may need to be tightened slightly.

NOTE:
If the brake still seems to slip, check the caster tread for wax buildup. Clean the tread with turpentine (if necessary).

8. Set the brake/steer pedal to place the system in steer.

9. Swivel the brake/steer caster.

10. The caster should lock into a position parallel with the length of the bed.

11. Ensure the brake/steer pedal is in the neutral position.

12. Rotate the brake/steer caster 180 degrees.
13. The caster should again lock into a position parallel with the length of the bed.
14. Set the brake/steer pedal to place the system in neutral.
15. Swivel the brake/steer caster from side-to-side, while checking for signs of ratcheting.
16. If necessary, loosen the setscrew (D) to allow the caster to swivel without ratcheting (but can still be locked in the steer position).

Brake Caster (Versions “C”, “D”, and “E”)

Adjustment

1. Set the brake/steer pedal to place the system in neutral.

1. Perform steps 1 through 3 as instructed in the section “Caster Assembly” on page 4-99.
2. Swivel the caster about 2 inches from side-to-side while tightening setscrew (D).
3. Turn the setscrew clockwise until a light ratcheting sound is heard.
4. Loosen setscrew (D) (turn counterclockwise) until the ratcheting stops.
5. Set the brake/steer pedal to place the system in the brake position.
6. Ensure that the caster tire does not roll.
7. If the caster tire rolls, the setscrew may need to be tightened slightly.

NOTE:
If the brake still seems to slip, check the caster tread for wax buildup. Clean the tread with turpentine (if necessary).

Chapter 5
Parts List

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Warranty

HILL-ROM® COMPANY, INC.
LIMITED WARRANTY

Hill-Rom Company, Inc. (Hill-Rom) has a long tradition of providing superior products and service to our customer. Our goal is "Total Customer Satisfaction". In that spirit, Hill-Rom is proud to offer the following warranty.

GENERAL WARRANTY (APPLICABLE UNLESS A SPECIFIC WARRANTY IS LISTED)

Hill-Rom warrants to the original purchaser that its products and replacement parts shall be free from defects in material and workmanship for a period of one (1) year from date of delivery. Hill-Rom's obligation under this warranty is expressly limited to supplying replacement parts and/or service for, or replacing, at its option, any product which is, in the sole discretion of Hill-Rom, found to be defective. In addition to the foregoing one year warranty, Hill-Rom warrants to the original purchaser that the frame and welds on its products will be free from structural defects for the life of the product. Any product upgrade or modification initiated by Hill-Rom does not affect the original product warranty.

SPECIFIC WARRANTIES

MATTRESS WARRANTIES

Hill-Rom warrants to the original purchaser that its mattress product shall be free from defects in material and workmanship for a period of two (2) years from date of delivery. However, electro mechanical mattress components (compressors, valves, printed circuit boards, hoses, and couplers) are covered by the general one (1) year warranty.

EXPENDABLES WARRANTIES

A sixty (60) day limited warranty from date of delivery applies to expendable parts such as cushions, coverlets, software diskettes, locator badge batteries, dome light incandescent bulbs, overhead fluorescent tubes, heating elements, temperature probes, filter sheets, and microspheres. This warranty is limited to replacement of the parts covered.

TO OBTAIN PARTS AND SERVICE

In the United States, call Hill-Rom Technical Support Department at (800) 445-3720, Monday through Friday. In Canada, call Hill-Rom Technical Support Department at (800) 267-2337, Monday through Friday. Outside the United States and Canada, call your authorized Hill-Rom Distributor. In order to expedite service, we request you furnish the following information: customer identification number, product model number, serial number, and description of problem. A qualified specialist will provide, via telephone (United States and Canada), or FAX (Outside the United States and Canada), troubleshooting assistance for facility personnel and provide necessary parts to make repairs. If troubleshooting determines the need for on-site technical service, a qualified service representative will be dispatched. Replacement of non-technical items will be the responsibility of the customer. If requested by Hill-Rom, products or parts for which a warranty claim is made shall be returned prepaid to Hill-Rom's factory.

OUT OF WARRANTY EXCHANGE POLICY

After the expiration of the original warranty, upon request, Hill-Rom will ship as a replacement, components such as selected: motors and printed circuit boards, for like units returned to Hill-Rom by the original purchaser at a substantial savings. Please call Hill-Rom Technical Support Department for current pricing.

PARTS AVAILABILITY POLICY

Hill-Rom will offer parts for new and remanufactured products for ten (10) years from date of sale; for communications products for five (5) years from date of sale.

Note: Some original component parts and assemblies may not be available; functional equivalents may be substituted.

THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER EXPRESS WARRANTIES AND IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS OF PURPOSE. HILL-ROM'S OBLIGATION UNDER THESE WARRANTIES SHALL NOT INCLUDE ANY LIABILITY FOR LOSS OF PROFITS, DIRECT, INDIRECT OR CONSEQUENTIAL DAMAGES OR DELAYS. Some states, provinces, or countries do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion or limitation may not apply. Any improper or negligent use, any alterations or repairs not in accordance with Hill-Rom's manuals or performed by others in such manner as in Hill-Rom's sole judgment affects the product materially and adversely, shall void these warranties. These warranties do not cover failures due to misuse, abuse, neglect, or lack of routine maintenance. No employee or representative of Hill-Rom is authorized to change these warranties in any way or grant any other warranty unless in writing and signed by a Hill-Rom officer. These warranties provide specific legal rights; but, there may be other available rights, which vary from state to state, province to province, or country to country.

Revised April 17, 1997

NOTES:

Service Parts Ordering

Using the parts lists in this manual, identify the part number(s) you require. Find the product number and serial number on the product identification label.

When ordering parts for motors, specify the Hill-Rom part number, the motor type, and the motor model number.

Call Hill-Rom Technical Support at (800) 445-3720 with the following information:

- Six-digit customer account number
- Purchase order number
- Product number
- Serial number
- Part number(s)

Hill-Rom also provides a fax number to promptly order parts, request part prices and availability, or follow up on a service order. The fax number is (812) 934-8472.

To order parts, a $40.00 minimum will prevent a charge for processing your order.

Terms:

- Net 30 days
- F.O.B. Batesville, IN
- Prepaid shipping charges added to invoice
- All orders shipped UPS ground unless specified

Address all inquiries to:

ATTN TECHNICAL SUPPORT—PARTS
HILL-ROM COMPANY
1069 STATE ROUTE 46 E
BATESVILLE IN 47006-9167

Address all return goods to:

ATTN SERVICE STORES
DISTRIBUTION CENTER DOOR D23
HILL-ROM COMPANY

COUNTY ROAD 300E
BATESVILLE IN 47006-9167

NOTE:
To eliminate possible delays or incorrect billings, **do not** return any items without a Return Material Authorization (RMA) number. When a return is requested, an RMA packet is included with each order. This packet includes an RMA number, instructions, and a shipping label. If an RMA number is not available, obtain one by phoning Hill-Rom Technical Support at (800) 445-3720.

Exchange Policy

The following are Hill-Rom's policies for in-warranty and out-of-warranty exchanges.

In-Warranty Exchanges

In some cases, Hill-Rom will request that parts/products be returned for inspection. When this occurs, you are expected to return parts/products within 30 days of receipt of the exchange part. If you fail to return the inoperative parts/products within the 30 day period, Hill-Rom will invoice your facility for the full selling price of the parts/products.

NOTE:
The preceding billing procedure pertains **only** to parts/products that Hill-Rom requests to be returned.

In some cases, the invoice accompanying the parts will show the full selling price (only for Hill-Rom's internal use). Do not confuse this price with your price.

Do not return any parts without an RMA number. When parts/products have been requested to be returned, Hill-Rom will include an RMA packet with the parts/products shipment. If an RMA number is not available, obtain one by phoning Hill-Rom Technical Support at (800) 445-3720.

Out-of-Warranty Exchanges

You are expected to return the inoperative parts/product within 30 days of receipt of the exchange part. Hill-Rom will include an RMA packet with the parts/products shipment. If an RMA number is not available, obtain one by phoning Hill-Rom Technical Support at (800) 445-3720. If you fail to return the equipment within 30 days, Hill-Rom will invoice your facility for **the difference between the exchange price and the new price of the part**.

Recommended Spare Parts

See table 5-1 on page 5-8 for a recommended spare parts list for the Affinity Bed. The quantities are adequate for servicing five beds or more.

Table 5-1. Recommended Spare Parts

Part Number	Quantity	Description
SA1537 (3600)	1	Caster—brake/steer (“A” versions)
SA1536 (3600)	1	Caster—brake (“A” versions)
SA1534 (3600)	1	Control board—bed (115 volt)
40843-02 (3600)	1	Control board—bed (230 volt)
SA1533 (3600)	1	Control board—digital
43023-34 (3600)	5	Fuse (120 volt models)
43605-22 (3600)	5	Fuse (230 volt models)

Table 5-2. Additional Spare Parts List

Part Number	Quantity	Description
43143-01 (3600)	5	Fuse
19512 (3600)	1	Switch
SA1557 (3600)	1	Hilow limit assembly
SA1558 (3600)	1	Foot limit assembly
43042S (3600) 45060 (3600)	1 1	Hilow motor assembly (120 volt models) **or** hilow drive motor assembly (230)
41566S (3600) 44053 (3600)	1 1	Universal motor kit (120 volt models) **or** motor (230)
46223-01 (3600) 46223-02 (3600)	1 1	Hilow motor assembly (120 volt models) **or** hilow motor assembly (230)
45907-01 (3600) 4590702 (3600)	1 1	Head motor assembly (120 volt models) **or** head motor assembly (230)
46219-01 (3600) 46219-02 (3600)	1 1	Foot motor assembly (120 volt models) **or** foot motor assembly (230)
19636 (3600)	5	Slotted spring pin
42589 (3600)	5	Roll pin
42590 (3600)	10	Shear proof pins

Table 5-3. Recommended Spare Parts to Maintain the Bed's Overall Appearance and Serviceability

Part Number	Quantity	Description
41238 (3600)	2	Pad—left
41237 (3600)	2	Pad—right
42583-58 (3600)	2	Brake/steer disc—green
42583-57 (3600)	2	Brake/steer disc—red ("A", "B", and "C" versions)
42583-60 (3600)	2	Brake/steer disc—orange ("D" version)
41447 (3600) 43055 (3600)	2 2	Motor capacitor (120 volt models) **or** Motor capacitor (230 volt models)
43025 (3600) 43610 (3600)	1 1	Motor capacitor (120 volt models) **or** Capacitor (230 volt models), motor
SA1535 (3600)	1	Caster -swivel
41284 (3600)	1	CPR handle—left hand
41285 (3600)	1	CPR handle—right hand
41415 (3600)	1	CPR dampener
41450 (3600)	2	Trendelenburg gas spring
40952 (3600)	2	Dampener—extension
43022 (3600)	10	Foam tube
42573 (3600)	2	Foam—Trendelenburg handle
42588 (3600)	10	Foam handle grip
41163 (3600)	10	Handle plug—labor grip and Trendelenburg
32909 (3600)	4	Locknut
41106 (3600)	1	Manual crank handle
P3618 (3600)	1	Pendant control
46772-33 (3600)	1	Placenta basin
38819 (3600)	20	Siderail plug
45839-56 (3600)	6	Pull handle
40301 (3600)	2	Top siderail
19124 (3600)	40	Large cable tie

Table 5-4. Recommended Spare Parts for Beds With an Integrated Air Support System

Part Number	Quantity	Description
41188 (3600)	1	Circuit board—mattress drive

Table 5-5. Additional Spare Parts for Bed Siderails With Bed Functions, and Integrated Air Support System

Part Number	Quantity	Description
40840-01 (3600)	1	Circuit board assembly—lh siderail
40837-01 (3600)	1	Circuit board assembly—rh siderail
45948-00 (3600)	1	Switch package inboard—lh
45949-00 (3600)	1	Switch package inboard—rh
45950-00 (3600)	1	Switch package outboard—lh
45951-00 (3600)	1	Switch package outboard—rh

Table 5-6. Additional Spare Parts for Bed Siderails With Bed Functions, Nurse Call, Entertainment, and Lighting

Part Number	Quantity	Description
40840-01 (3600)	1	Circuit board assembly—lh siderail
40837-01 (3600)	1	Circuit board assembly—rh siderail
45948-03 (3600)	1	Switch package inboard—lh
45949-03 (3600)	1	Switch package inboard—rh
45950-03 (3600)	1	Switch package outboard—lh
45951-03 (3600)	1	Switch package outboard—rh
40963 (3600)	5	Volume knob

Table 5-7. Additional Spare Parts for Bed Siderails With Bed Functions, Integrated Air Support System, Nurse Call, Entertainment, and Lighting

Part Number	Quantity	Description
40840-01 (3600)	1	Circuit board assembly—lh siderail
40837-01 (3600)	1	Circuit board assembly—rh siderail
45948-07 (3600)	1	Switch package inboard—lh
45949-07 (3600)	1	Switch package inboard—rh
45950-07 (3600)	1	Switch package outboard—lh
45951-07 (3600)	1	Switch package outboard—rh
40963 (3600)	5	Volume knob

Table 5-8. Additional Spare Parts for Bed Siderails With Pendant Control Only

Part Number	Quantity	Description
None	None	None

Table 5-9. Additional Spare Parts for Bed Siderails With Bed Functions Only

Part Number	Quantity	Description
40840-01 (3600)	1	Circuit board assembly—lh siderail
40837-01 (3600)	1	Circuit board assembly—rh siderail
45948-09 (3600)	1	Switch package inboard—lh
45949-09 (3600)	1	Switch package inboard—rh
45950-09 (3600)	1	Switch package outboard—lh
45951-09 (3600)	1	Switch package outboard—rh

Table 5-10. Recommended Preventative Maintenance Supplies for Maintenance and Care of the Bed

Part Number	Quantity	Description
SA1533 (3600)	1	Control board—digital
SA4534 (3600)	1	Reclining mechanism (for beds with a serial number higher than 7000)
SA4843 (3600)	1	Reclining mechanism (for beds with a serial number lower than 7000)
43023-34 (3600)	1	Fuse
SA1557 (3600)	1	Hilow limit assembly
SA1558 (3600)	1	Foot limit assembly
42573 (3600)	2	Foam—Trendelenburg handle
47087 (3600)	4	Pull handle
6015356 (3600)	2	Siderail—gas assist

NOTES:

Base Frame—"A" Version

Figure 5-1. Base Frame—"A" Version

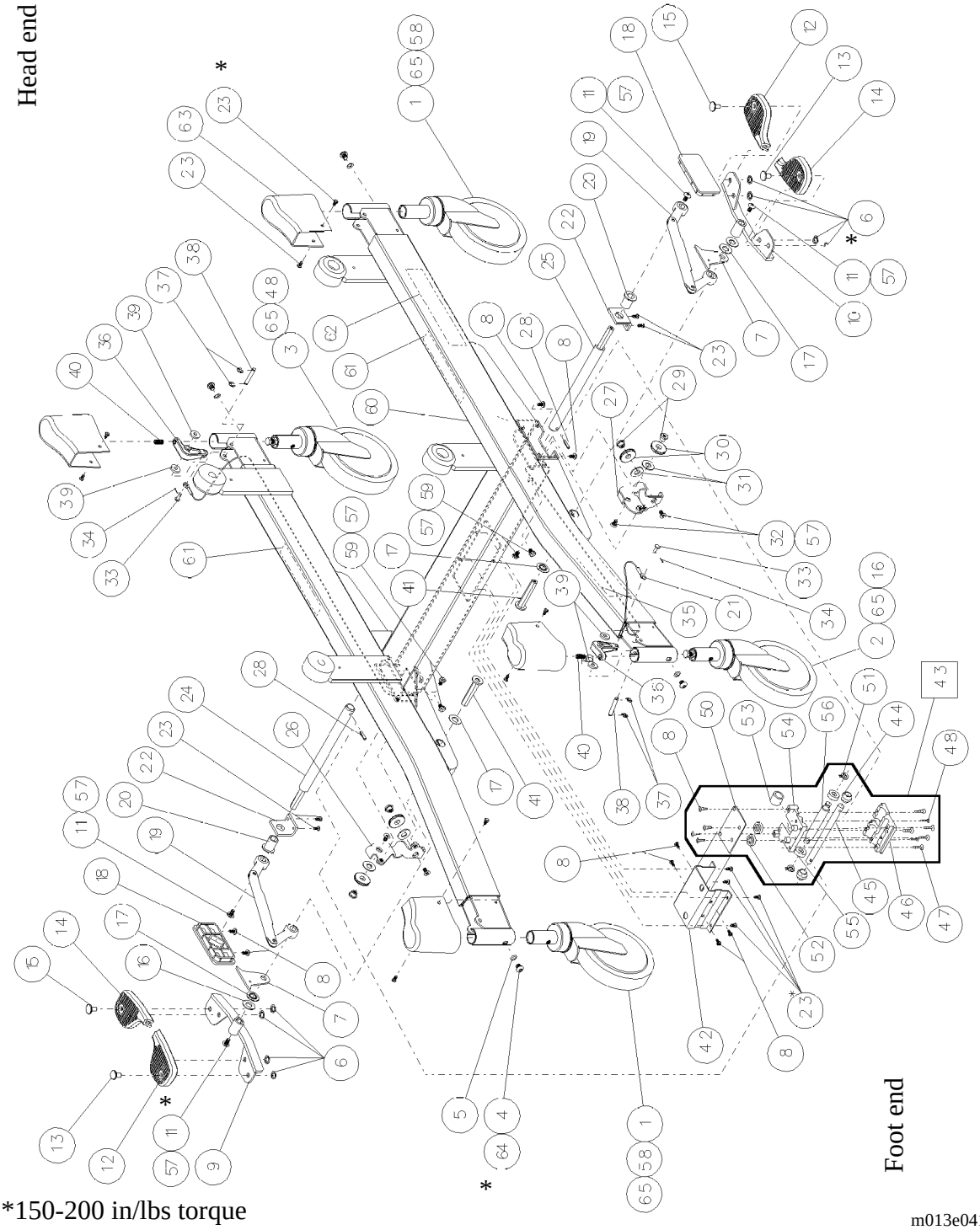


Table 5-11. Base Frame—"A" Version

Item Number	Part Number	Quantity	Description
1	42597 (3600)	2	Swivel caster ("A" and "B" versions)
2	42598 (3600)	1	Brake caster ("A" and "B" versions)
3	42599 (3600)	1	Brake/steer caster ("A" and "B" versions)
4	32572 (3600)	4	Screw
5	43030 (3600)	4	Caster spring washer
6	32909 (3600)	8	Locknut
7	40978 (3600)	2	Brake/steer stop cam
8	42142 (3600)	8	Pan head screw
9	41229 (3600)	1	Brake pedal—rh
10	42584 (3600)	1	Brake pedal—lh
11	4921 (3600)	4	Screw
12	41237 (3600)	2	Pad—right
13	42583-57 (3600)	2	Brake/steer disc—red
14	41238 (3600)	2	Pad—left
15	42583-58 (3600)	2	Brake/steer disc—green
16	45084-86 (3600)	1	Brake caster—8"
17	4630 (3600)	4	Oilite bushing
18	37326 (3600)	2	End cap—plain
19	40987 (3600)	2	Trans link assembly
20	37318 (3600)	2	Bushing—base
21	40996 (3600)	1	Cable assembly
22	41128 (3600)	2	Brake rod support bracket
23	18921 (3600)	16	Screw
24	40974 (3600)	1	Brake rod—rh
25	40973 (3600)	1	Brake rod—lh
26	41288 (3600)	1	Pulley bracket—rh
27	41289 (3600)	1	Pulley bracket—lh
28	9685 (3600)	2	Roll pin
29	41000 (3600)	4	Pulley stud
30	18864 (3600)	4	Sheave
31	40990 (3600)	4	Washer

Item Number	Part Number	Quantity	Description
32	40999 (3600)	4	Screw
33	757 (3600)	2	Connector pin
34	11094 (3600)	2	Cotter pin
35	44058 (3600)	2	Base label
36	34715 (3600)	2	Rocker arm assembly
37	18890 (3600)	4	Tru-arc ring
38	41001 (3600)	2	Groove pin rocker arm
39	41002 (3600)	4	Rocker arm spacer
40	32425 (3600)	2	Setscrew
41	40986 (3600)	2	Actuating pin
42	40988 (3600)	1	Bracket
43	40998 (3600)	1	Mechanism block assembly
44	32428 (3600)	2	Cam
45	33360 (3600)	1	Cam shaft
46	42247 (3600)	1	Mechanism block—bottom
47	42140 (3600)	5	Screw
48	45084-84 (3600)	1	Brake/steer caster—8" ("A" and "B" versions)
49	42142 (3600)	4	Pan head screw
50	34516 (3600)	1	Stiffener plate
51	12220 (3600)	2	Tru-arc ring
52	18887 (3600)	2	Bearing
53	18863 (3600)	1	Roller
54	SA1157 (3600)	1	Block top, adapter, screw
55	31211 (3600)	2	Bearing
56	18860 (3600)	1	Follower shaft
57	SA3618 (3600)	As required	Blue Loctite
58	45084-80 (3600)	2	Swivel caster—8" ("A" and "B" versions)
59	90018-06 (3600)	4	Hex screw
60	40991 (3600)	1	Base frame
61	41477 (3600)	2	Foot clear label
62	41475 (3600)	2	Base label
63	41269 (3600)	4	Leg cover

Item Number	Part Number	Quantity	Description
64	SA4840 (3600)	As required	Red Loctite #271
65	46872-60 (3600)	1	Caster wheel ("A" and "B" versions)

Base Frame—“B”, “C”, “D”, and “E” Versions

Figure 5-2. Base Frame—“B”, “C”, “D”, and “E” Versions

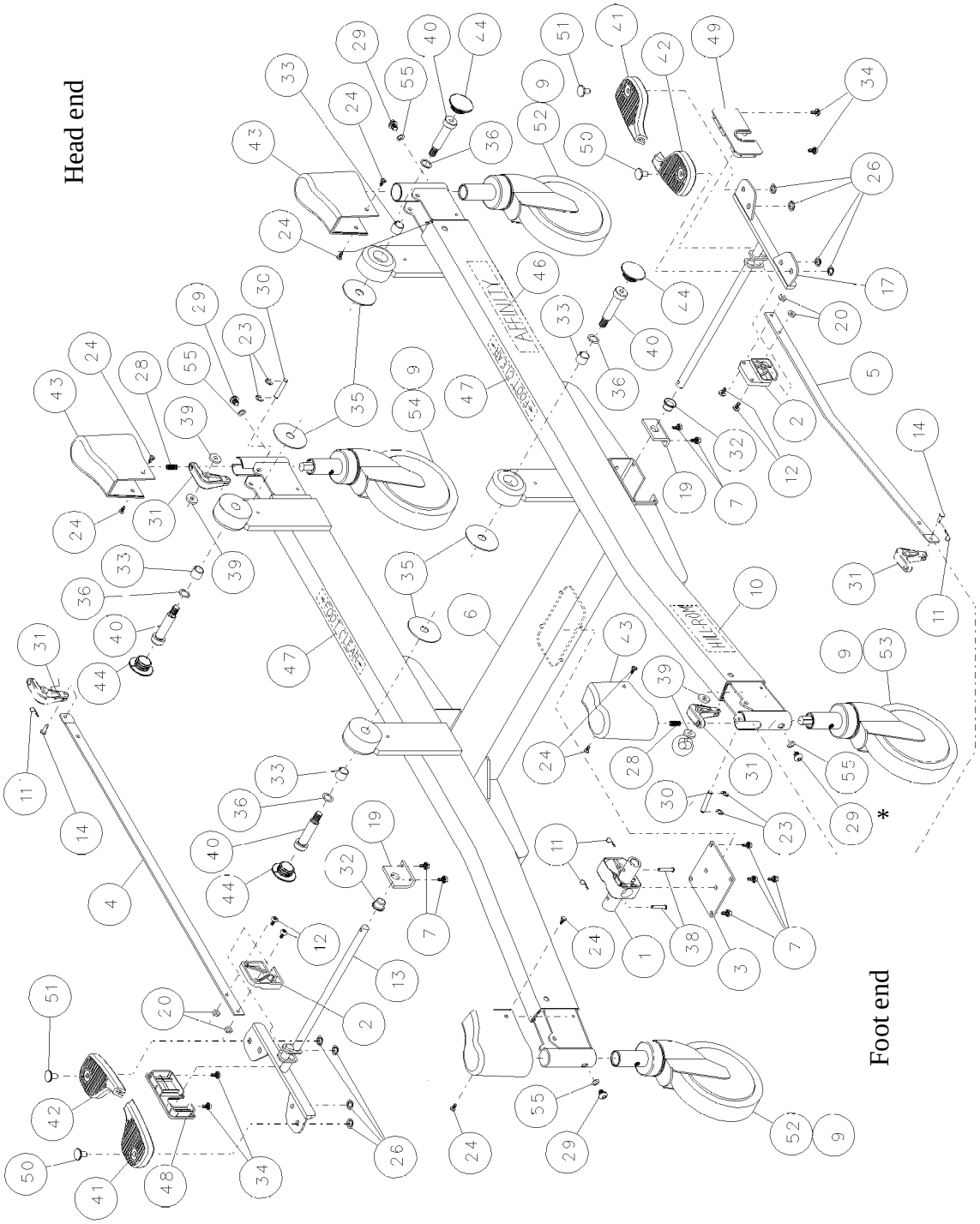


Table 5-12. Base Frame—“B”, “C”, “D”, and “E” Versions

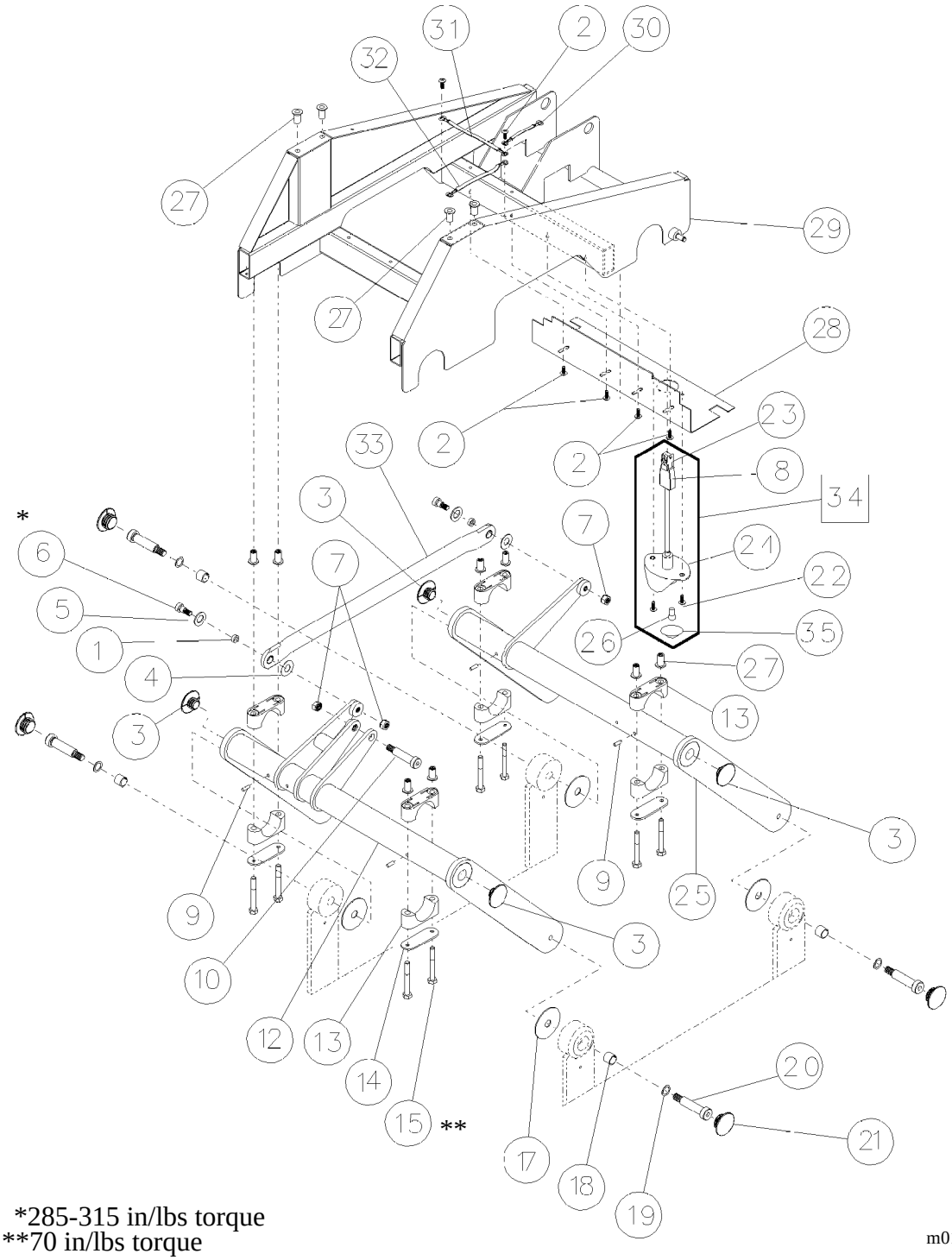
Item Number	Part Number	Quantity	Description
1	44023 (3600)	1	Detent mechanism assembly
2	43953 (3600)	2	Cam pivot
3	43957 (3600)	1	Plate—detent housing
4	43956 (3600)	1	Brake/steer strip
5	43955 (3600)	1	Brake strip
6	45581-48 (3600)	1	Base frame weldment
7	18921 (3600)	11	Torx button head screw
8	41370 (3600)	8	Lockwasher
9	SA7113-48 (3600)	1	Caster wheel (“C”, “D”, and “E” versions)
10	44058 (3600)	2	Base label
11	44352 (3600)	4	Hair pin
12	90055-10 (3600)	4	Screw
13	44433 (3600)	1	Brake pedal assembly—rh
14	757 (3600)	2	Connector pin
15	41430 (3600)	1	Night light and cable assembly
16	45008-33 (3600)	1	Night light bracket
17	43940 (3600)	1	Brake pedal assembly—lh
18	41024 (3600)	4	Pivot block plate
19	44017 (3600)	2	Bracket—brake rod support
20	755 (3600)	4	Locknut
21	20605 (3600)	10	Locknut
22	36651 (3600)	1	Ground strap assembly—9"
23	18890 (3600)	4	Tru-arc ring
24	18921 (3600)	9	Screw
25	43794 (3600)	1	Ground strap assembly
26	32909 (3600)	8	Locknut
28	32425 (3600)	2	Setscrew
29	32572 (3600)	4	Screw
30	41001 (3600)	2	Groove pin rocker arm
31	34715 (3600)	2	Rocker arm assembly
32	90340-02 (3600)	2	Bearing DU flanged

Item Number	Part Number	Quantity	Description
33	9026306 (3600)	4	Bearing DU self-lubricating
34	46260 (3600)	4	Screw
35	40983 (3600)	4	Base washer plastic
36	4708548 (3600)	4	Base boss cap
37	60649 (3600)	7	Threaded insert
38	44350 (3600)	2	Clevis pin
39	41002 (3600)	4	Rocker arm spacer
40	90260-10 (3600)	4	Shoulder bolt
41	41237 (3600)	2	Pad—right
42	41238 (3600)	2	Pad—left
43	41269 (3600)	4	Leg cover
44	41308 (3600)	4	End cap
45	40827 (3600)	As required	Dual sided Tape
46	41475 (3600) or 46235 (3600)	2 2	Base label ("B" and "C" versions) Base label—Affinity II ("D" and "E" versions)
47	41477 (3600)	2	Foot clear label
48	43946-02 (3600)	1	End cap cross tube—rh
49	43946-01 (3600)	1	End cap cross tube—lh
50	42583-57 (3600) or 42583-60 (3600)	2 2	Brake/steer disc—red ("B" and "C" versions) or Brake/steer disc—orange ("D" and "E" versions)
51	42583-58 (3600)	2	Brake steer disc—green
52	45084-60 (3600)	2	Caster swivel (6") ("C", "D", and "E" versions)
53	45084-66 (3600)	1	Caster, brake (6") ("C", "D", and "E" versions)
54	45084-64 (3600)	1	Caster, brake/steer (6") ("C", "D", and "E" versions)
55	43030 (3600)	4	Caster spring washer
56	90016-48 (3600)	8	Hex bolt

NOTES:

Intermediate Frame

Figure 5-3. Intermediate Frame



*285-315 in/lbs torque
**70 in/lbs torque

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Table 5-13. Intermediate Frame

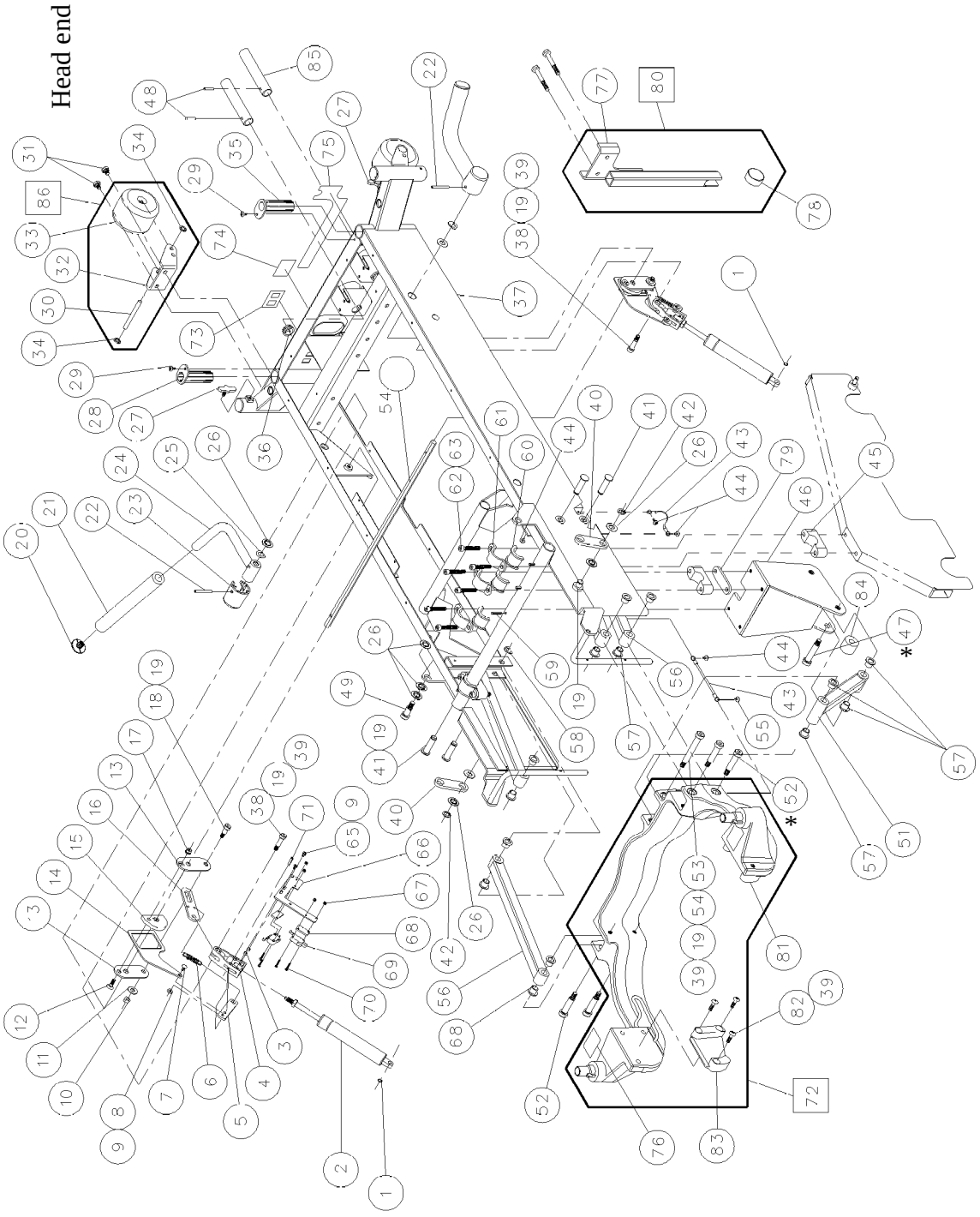
Item Number	Part Number	Quantity	Description
1	9026307 (3600)	2	Bearing DU self lubricating
2	18921 (3600)	6	Screw
3	41309 (3600)	4	Torque tube plug
4	43052 (3600)	2	Washer
5	17264 (3600)	2	Washer
6	90260-06 (3600)	2	Shoulder screw
7	60949 (3600)	3	Jam nut
8	41102 (3600)	1	Capacitor housing
9	27509 (3600)	4	Roll pin
10	90260-28 (3600)	1	Shoulder screw
11	SA4841 (3600)	As required	Red Loctite #262
12	44148 (3600)	1	Hilow lift arm crank
13	41022 (3600)	8	Pivot block
14	41024 (3600)	4	Pivot block plate
15	90016-48 (3600) 41370 (3600)	8 8	Hex head machine bolt Lockwasher
16	SA3618 (3600)	As required	Blue Loctite
17	40983 (3600)	4	Base washer plastic
18	90263-03 (3600)	4	DU self-lubricating bearing
19	43054 (3600)	4	Washer
20	90260-10 (3600)	4	Shoulder bolt
21	41308 (3600)	4	End cap
22	34606 (3600)	2	Screw
23	40013 (3600)	1	Capacitor—2 circuit
24	34380-01 (3600)	1	Lamp
25	45706-48 (3600)	1	Hilow lift arm (follower)
26	SA4198 (3600)	1	Night light bulb—Centra
27	41020 (3600) 47072 (3600) 60133 (3600)	12	Threaded insert (6/92-4/95) Rivnut (4/95-10/96) Hex rivnut (10/96-present)
28	45008-33 (3600)	1	Night light bracket
29	43959 (3600)	1	Intermediate frame assembly

Item Number	Part Number	Quantity	Description
30	37879 (3600)	1	Ground strap assembly
31	39240-06 (3600)	1	Ground strap assembly
32	36651 (3600)	1	Ground strap assembly—9"
33	41310 (3600)	1	Link arm assembly
34	41430 (3600)	1	Night light and cable assembly
35	SA3773 (3600)	1	Night light lens

NOTES:

Main Frame

Figure 5-4. Main Frame



*285-315 in/lbs torque

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Table 5-14. Main Frame

Item Number	Part Number	Quantity	Description
1	43059 (3600)	2	Retaining ring
2	41450 (3600)	2	Trendelenburg gas spring
3	43041 (3600)	2	Spacer—Trendelenburg limit
4	41252 (3600)	2	Trendelenburg gas head
5	41091 (3600)	2	Trendelenburg release lever
6	43056 (3600)	2	Extension spring
7	43049 (3600)	2	Shoulder screw
8	40497 (3600)	2	Keps nut
9	SA3618 (3600)	As required	Blue Loctite
10	831 (3600)	2	Locknut
11	4540 (3600)	2	Washer
12	90061-16 (3600)	2	Screw
13	41073 (3600)	4	Trendelenburg activator
14	41087 (3600)	2	Trendelenburg follower
15	41135 (3600)	2	Trendelenburg cam
16	41079 (3600)	2	Trendelenburg stop
17	20802 (3600)	2	Keps nut
18	90259-10 (3600)	2	Shoulder bolt
19	37929 (3600)	As required	Anti-seize
20	41163 (3600)	2	Handle plug—labor grip and Trendelenburg
21	42573 (3600)	2	Foam—Trendelenburg handle
22	42539 (3600)	2	Spiral pin
23	41153 (3600)	2	Trendelenburg handle cover
24	40896 (3600)	2	Trendelenburg handle assembly
25	22322 (3600)	2	Spring washer
26	4630 (3600)	12	Oilite bushing
27	38135 (3600)	2	Knob assembly
28	41250 (3600)	1	Oval headboard bushing
29	18920 (3600)	2	Screw
30	25208 (3600)	2	Axle
31	90016-06 (3600)	4	Hex cap screw

Item Number	Part Number	Quantity	Description
32	41243 (3600)	2	Roller bumper bracket
33	34557 (3600)	2	Roller bumper
34	25210 (3600)	4	Pushnut
35	41078 (3600)	1	Round headboard bushing
36	36414 (3600)	2	Release pedal bushing
37	41026 (3600)	1	Main frame assembly
38	90259-16 (3600)	2	Shoulder screw
39	SA4840 (3600)	As required	Red Loctite
40	43039 (3600)	2	Seat pivot link
41	41089 (3600)	4	Foot section pin
42	36826 (3600)	2	Retaining ring
43	37879 (3600)	2	Ground strap assembly
44	18921 (3600)	4	Screw
45	41023 (3600)	4	Trendelenburg pivot block
46	48869 (3600)	1	Foot section assembly (pivot weld)
47	48868 (3600)	1	Clevis pin
48	37275 (3600)	2	Roll pin
49	90260-06 (3600)	2	Shoulder screw
50	49257 (3600)	1	Hair pin
51	41263 (3600)	1	Foot section link bar
52	90260-28 (3600)	4	Shoulder screw
53	90260-48 (3600)	1	Shoulder screw
54	37996 (3600)	As required	Adhesive surface primer
55	13206 (3600)	1	Screw
56	41042 (3600)	4	Foot section lift arm
57	90263-01 (3600)	16	DU bushing
58	19678 (3600)	4	Tru-arc ring
59	27509 (3600)	4	Roll pin
60	41036 (3600)	4	Foot section pivot bushing
61	41037 (3600)	4	Foot section bushing plate
62	90161-28 (3600)	8	Cap screw
63	SA4841 (3600)	As required	Red Loctite

Item Number	Part Number	Quantity	Description
64	40915 (3600)	1	Trendelenburg handle hex bar
65	15463 (3600)	2	Bolt
66	41253 (3600)	1	Trendelenburg limit switch bracket
67	20605 (3600)	4	Locknut
68	34401 (3600)	2	Spacer
69	19512 (3600)	2	Switch
70	31642 (3600)	4	Screw
71	9685 (3600)	2	Roll pin
72	41111 (3600)	1	Yoke casting assembly
73	41437-01 (3600)	2 or 3	Rocker switch
74	45827 (3600)	1	Lockout label
75	43027 (3600)	1	Backframe label
76	42610 (3600)	2	Warning label
77	40531 (3600)	1	Roller bar
78	49738 (3600)	1	Rubber bumper
79	46258-pl (3600)	1	Spacer plate
80	41295 (3600)	1	Roller bumper assembly
81	41287 (3600)	1	Latch—lh
82	42574 (3600)	6	Screw
83	41286 (3600)	1	Latch—rh
84	41266 (3600)	1	Spacer
85	41110 (3600)	2	Head/foot crank tube
86	41243 (3600)	1	Roller bumper and bracket assembly

Upper Frame

Figure 5-5. Upper Frame

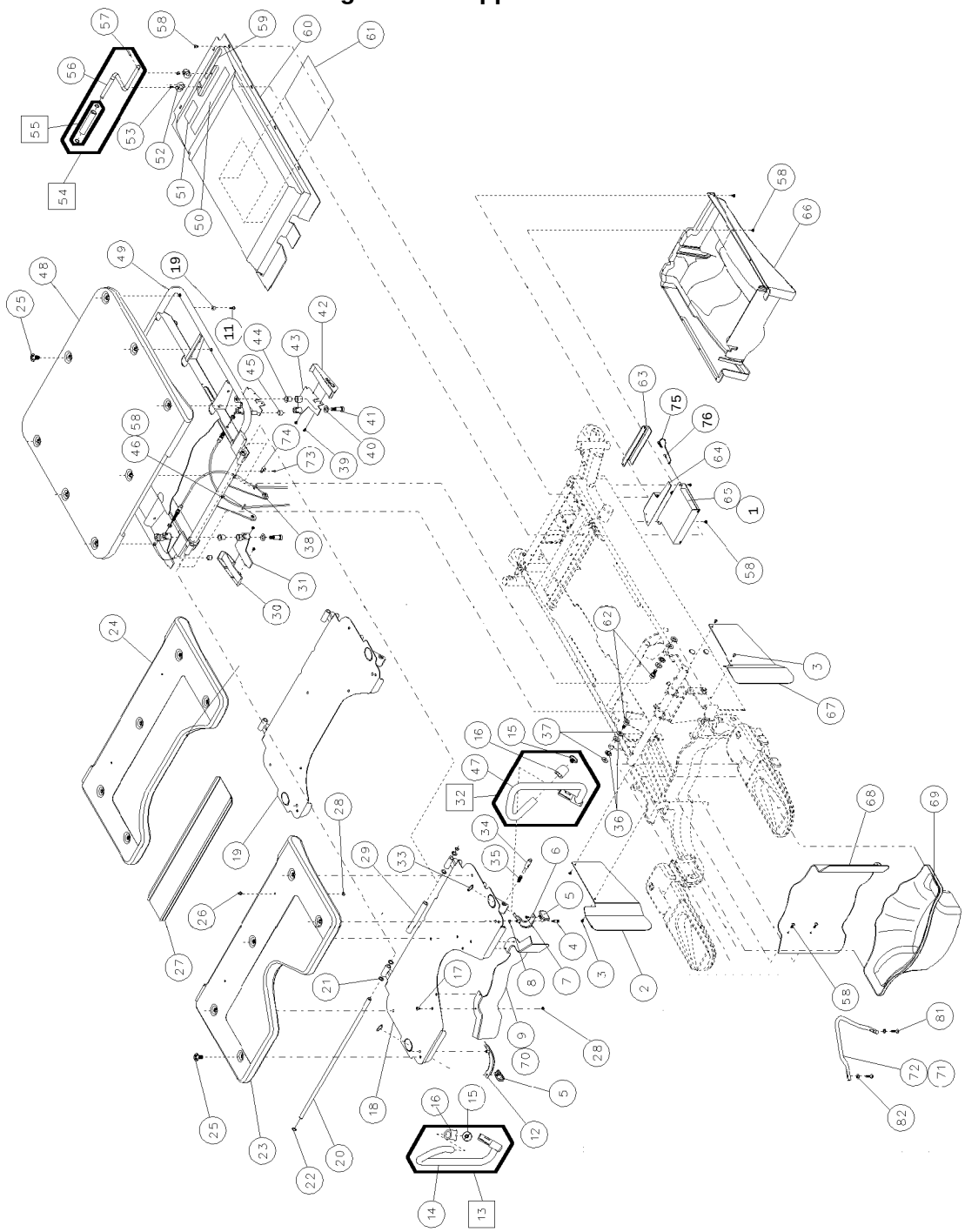

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Table 5-15. Upper Frame

Item Number	Part Number	Quantity	Description
1	40831-01 (3600)	1	SideCom board with relay
2	41272 (3600)	1	Seat side shroud rh
3	23119 (3600)	4	Screw
4	90338-10 (3600)	2	Shoulder screw
5	47087 (3600)	2	Pull handle
6	40816 (3600)	1	Handle bracket—lh
7	90016-40 (3600)	2	Hex head machine bolt
8	42617 (3600)	2	Spring washer
9	41271 (3600)	1	Front seat shroud—v
10	SA4841 (3600)	As required	Red Loctite
11	90037-04 (3600)	2	Screw, thread cutting
12	40819 (3600)	1	Handle bracket—rh
13	43016 (3600)	1	Labor grip assembly—rh
14	43017 (3600)	2	Labor grip assembly—rh
15	41163 (3600)	2	Handle plug—labor grip and Trendelenburg
16	43022 (3600)	2	Foam tube
17	3689 (3600)	4	Screw
18	44789 (3600)	1	Seat section
19	18502 (3600)	2	Bumper
20	42603 (3600)	1	Head/seat drive pin
21	41047 (3600)	4	Washer
22	43552 (3600)	2	Retaining ring
23	41059 (3600)	1	V-seat panel
24	41060 (3600)	1	U seat panel
25	16344-01 (3600)	13	Stainless steel screw
26	40958 (3600)	2	Mattress retaining snap
27	41068 (3600)	1	Splash channel
28	15250 (3600)	8	Locknut washer base
29	43062 (3600)	1	Spacer
30	41285 (3600)	1	CPR handle—rh
31	42614 (3600)	1	CPR handle bracket weldment—rh

Item Number	Part Number	Quantity	Description
32	43019 (3600)	1	Labor grip assembly—lh
33	40817 (3600)	2	Retaining ring
34	40811 (3600)	2	Locking pin
35	40812 (3600)	2	Spring
36	4630 (3600)	4	Oilite bushing
37	22322 (3600)	4	Spring washer
38	14450 (3600)	2	Small cable tie
39	90028-04 (3600)	4	Screw
40	40984 (3600)	2	Plastic washer
41	90260-16 (3600)	2	Shoulder screw
42	41284 (3600)	1	CPR handle—lh
43	42613 (3600)	1	CPR handle bracket weldment—lh
44	41453 (3600)	2	Bushing
45	34838 (3600)	2	Vinyl cap
46	27873 (3600)	2	Cable clamp
47	43020 (3600)	1	Labor grip weldment—lh
48	41061 (3600)	1	Head deck
49	41239 (3600)	1	Head section frame
50	41478 (3600)	1	Drape label
51	45828 (3600)	1	Crank handle label
52	37693 (3600)	2	Gripper clip
53	17017 (3600)	2	Screw
54	41106 (3600)	1	Manual crank handle
55	SA1318 (3600)	1	Crank handle/rings
56	41105 (3600)	1	Crank handle shaft
57	9685 (3600)	1	Roll pin
58	18921 (3600)	24	Screw
59	22247 (3600)	1	Caution label
60	41207 (3600)	1	Top motor cover
61	41136 (3600)	1	Wiring diagram
62	90260-08 (3600)	2	Shoulder screw
63	43031 (3600)	1	Bracket—non-SideCom

Item Number	Part Number	Quantity	Description
64	42618 (3600)	1	Junction box protector
65	41225-01 (3600)	1	Junction box assembly
66	44022 (3600)	1	Bottom motor cover
67	41273 (3600)	1	Seat side shroud—lh
68	41413 (3600)	1	Front shroud
69	46772-33 (3600)	1	Placenta basin
70	41270 (3600)	1	Front seat shroud—u
71	42576-T8 (3600)	1	U-seat wireform
72	42575-T8 (3600)	1	V-seat wireform
73	18252 (3600)	6	Screw
74	38613 (3600)	6	Cable clamp
75	345121 (3600)	1	Dummy plug
76	4759 (3600)	1	Screw

Head Motor Assembly—P/N 45907-01 and P/N 4590702 (230V)

Figure 5-6. Head Motor Assembly—P/N 45907-01 and P/N 4590702 (230V)

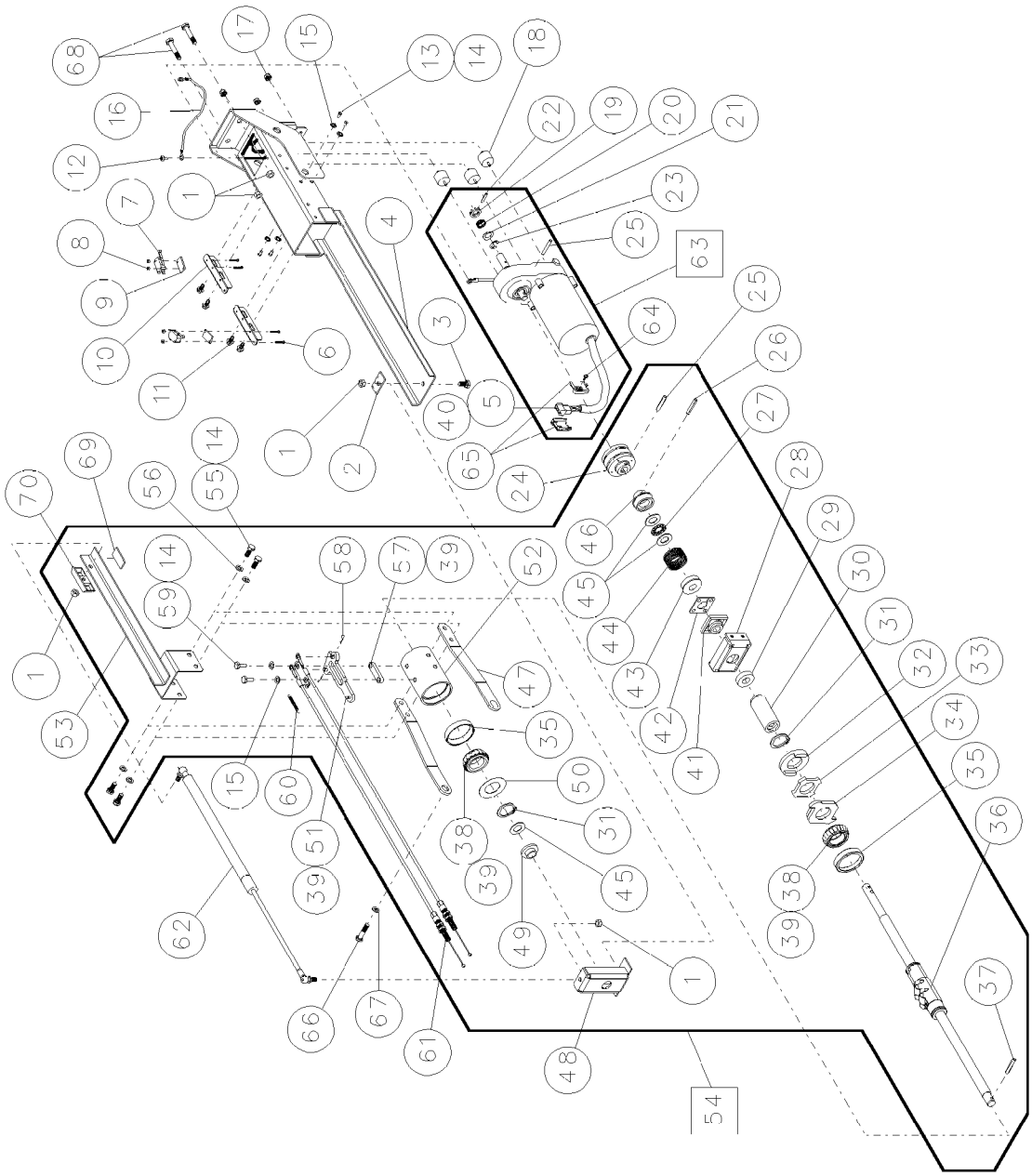

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Table 5-16. Head Motor Assembly—P/N 45907-01 and P/N 4590702 (230V)

Item Number	Part Number	Quantity	Description
1	831 (3600)	1	Locknut
2	43583 (3600)	2	Spacer—head drive
3	42889 (3600)	1	Hex bolt
4	41145 (3600)	1	Mounting bracket assembly (“A”, “B”, and “C”)
4	46216 (3600)	1	Mounting bracket assembly (“D”)
5	SA8704 (3600)	1	3-Pin amp connector
6	31642 (3600)	4	Screw
7	19512 (3600)	2	Switch
8	20605 (3600)	4	Locknut
9	34401 (3600)	2	Spacer
10	41241 (3600)	2	Head switch bracket
11	21913 (3600)	4	Screw, hex head
12	18921 (3600)	1	Screw
13	90018-06 (3600)	4	Hex screw
14	SA3618 (3600)	As required	Blue Loctite
15	27251 (3600)	6	Washer
16	39240-06 (3600)	1	Ground strap assembly
17	20802 (3600)	3	Keps nut
18	39922 (3600)	3	Rubber mount
19	34864 (3600)	1	Washer
20	34951 (3600)	1	Spring
21	22322 (3600)	1	Spring washer
22	19636 (3600)	1	Slotted spring pin
23	19678 (3600)	1	Tru-arc ring
24	43646 (3600)	1	Coupling assembly
25	39913 (3600)	1	Spiral pin
26	44380 (3600)	1	Groove pin
27	11578 (3600)	1	Thrust bearing
28	41134 (3600)	1	Bearing brace—plated
29	41107 (3600)	1	Foot spacer—plated

Item Number	Part Number	Quantity	Description
30	44034 (3600)	1	Stop collar
31	34326 (3600)	2	Retaining ring
32	33611 (3600)	1	Hub
33	33613 (3600)	1	Lock pad
34	41142 (3600)	1	Lock hub
35	38069 (3600)	2	Bearing cup
36	44079 (3600)	1	Head ball screw
37	3517 (3600)	1	Spring pin
38	38070 (3600)	2	Bearing cone
39	SA3351 (3600)	As required	Lithium grease
40	30951 (3600)	1	Pin
41	37862 (3600)	1	Bearing end
42	37832 (3600)	1	Brake washer
43	39247 (3600)	1	Floating brake drum
44	49772 (3600)	1	Brake spring w/lug
45	40741 (3600)	3	Thrust race
46	49773 (3600)	1	Fixed brake block
47	41139 (3600)	2	Head strap
48	41093 (3600)	1	Head screw bracket
49	34613 (3600)	1	Bearing
50	33622 (3600)	1	Bearing spacer
51	41141 (3600)	1	Latch
52	41143 (3600)	1	Bearing housing
53	44081 (3600)	1	Head dampener bracket weldment
54	41132 (3600)	1	Head screw assembly
55	34637 (3600)	4	Bolt
56	25204 (3600)	6	Lockwasher
57	46771 (3600)	1	Latch guide
58	44352 (3600)	2	Hair pin
59	90144-10 (3600)	2	Screw
60	33618 (3600)	1	Spring
61	41137 (3600)	1	Release cable assembly

Item Number	Part Number	Quantity	Description
62	41415 (3600)	1	CPR dampener
63	41566S (3600)	1	Universal motor kit
64	16116 (3600)	2	Screw
65	36234 (3600)	2	Strain relief
66	90260-06 (3600)	2	Shoulder screw
67	43432 (3600)	2	Washer
68	90016-48 (3600)	2	Hex bolt
69	44021 (3600)	1	Sound tape
70	44035 (3600)	1	Trip guide

Hilow Motor Assembly—P/N 46223-01 and P/N 46223-02 (230V)

Figure 5-7. Hilow Motor Assembly—P/N 46223-01 and P/N 46223-02 (230V)

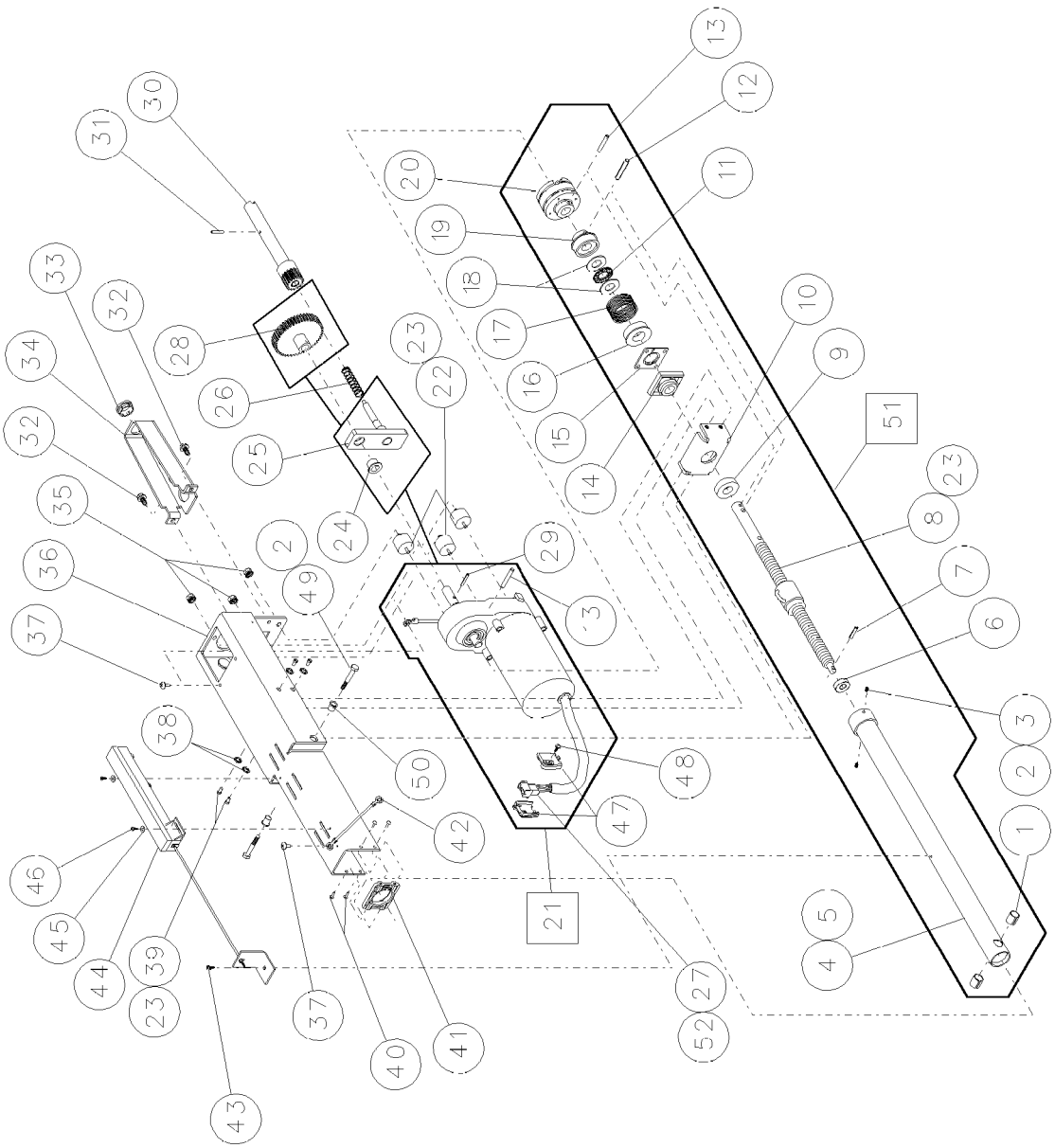

Table 5-17. Hilow Motor Assembly—P/N 46223-01 and P/N 46223-02 (230V)

Item Number	Part Number	Quantity	Description
1	9026306 (3600)	2	Bearing DU self-lubricating
2	SA4842 (3600)	As required	Purple Loctite
3	1215 (3600)	2	Allen screw
4	44146 (3600)	1	Hilow drive tube assembly
5	36958 (3600)	As required	Lubricant—sanitary spray
6	41490 (3600)	1	Roller
7	27509 (3600)	1	Roll pin
8	44078 (3600)	1	Hilow ball screw
9	41107 (3600)	1	Foot spacer—plated
10	41134 (3600)	1	Bearing brace—plated
11	11578 (3600)	1	Thrust bearing
12	44380 (3600)	1	Groove pin
13	42590 (3600)	2	Spiral pin
14	37862 (3600)	1	Bearing end
15	37832 (3600)	1	Brake washer
16	39247 (3600)	1	Floating brake drum
17	49772 (3600)	1	Brake spring with lug
18	40741 (3600)	2	Thrust race
19	49773 (3600)	1	Fixed brake block
20	43646 (3600)	1	Coupling assembly
21	43042S (3600) or 45060 (3600)	1	Hilow motor assembly Hilow drive motor assembly—230V
22	39922 (3600)	3	Rubber mount
23	SA3618 (3600)	As required	Blue Loctite
24	36889 (3600)	1	Oilite bushing
25	41280 (3600)	1	Gear support
26	34418 (3600)	1	Compression spring
27	SA8704 (3600)	1	3-Pin amp connector
28	49640 (3600)	1	Gear
29	19636-01 (3600)	1	Roll pin
30	44108 (3600)	1	Hilow gear

Item Number	Part Number	Quantity	Description
31	37275 (3600)	1	Roll pin
32	21913 (3600)	2	Screw, hex head
33	36414 (3600)	1	Release pedal bushing
34	42594 (3600)	1	Hilow crank bracket assembly
35	20802 (3600)	3	Keps nut
36	44063 (3600)	1	Pivot bracket
36	46720 (3600)	1	Pivot bracket
37	18921 (3600)	2	Screw
38	27251 (3600)	4	Washer
39	90018-06 (3600)	4	Hex screw
40	34680 (3600)	4	Screw
41	39611 (3600)	1	Tube stop
42	43794 (3600) or 39240-06 (3600)	1	Ground strap assembly Ground strap assembly
43	90245-06 (3600)	1	Screw
44	SA1557 (3600)	1	Hilow limit assembly
45	2449 (3600)	2	Washer
46	90037-06 (3600)	2	Screw
47	36234 (3600)	2	Strain relief
48	16116 (3600)	2	Screw
49	44164 (3600)	2	Hilow shoulder bolt
50	44163 (3600)	2	Bearing—plastic
51	41151 (3600)	1	Ball screw assembly
52	30951 (3600)	1	Pin

NOTES:

Foot Motor Assembly—P/N 46219-01 and P/N 46219-02 (230V)

Figure 5-8. Foot Motor Assembly—P/N 46219-01 and P/N 46219-02 (230V)

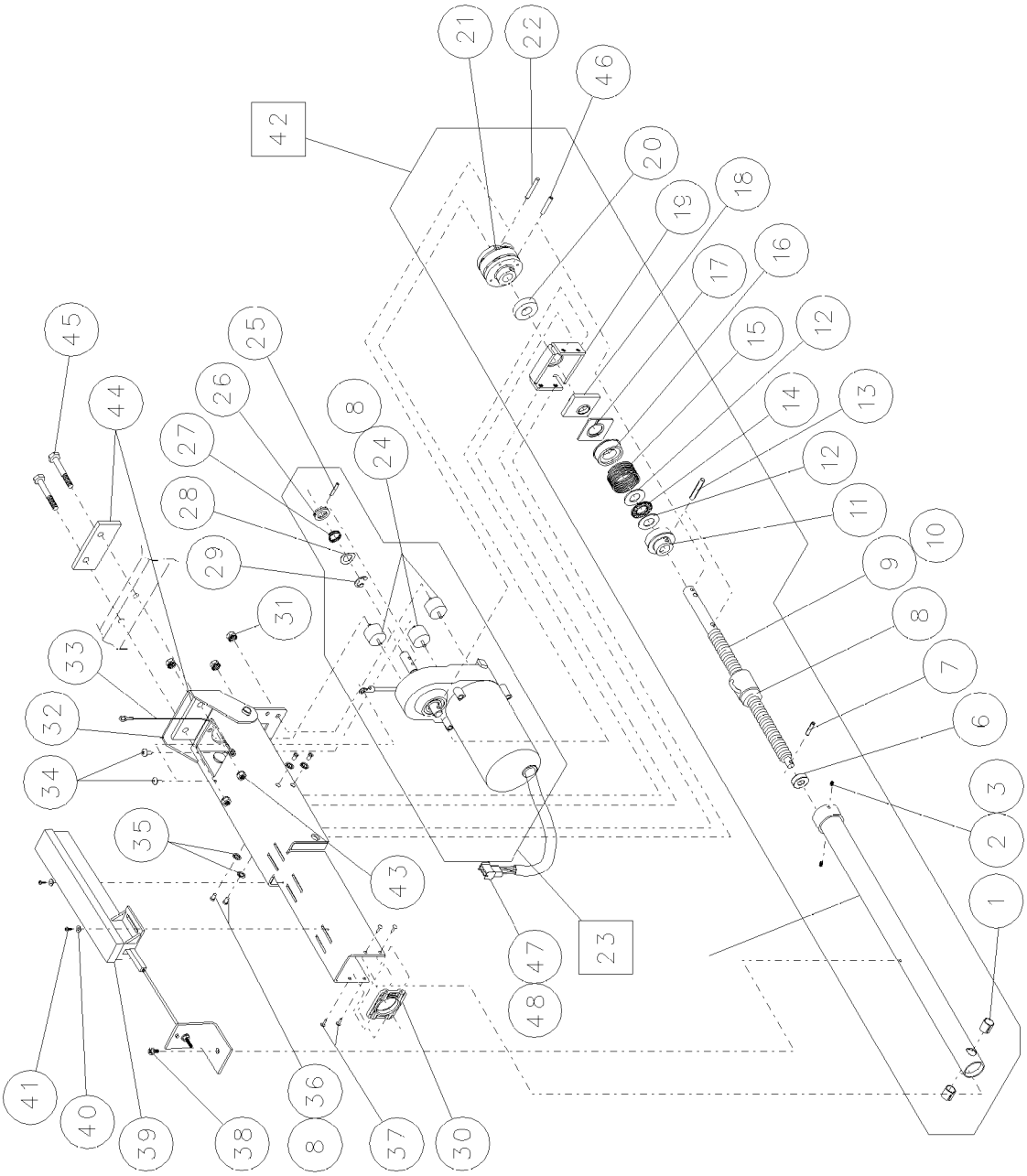

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Table 5-18. Foot Motor Assembly—P/N 46219-01 and P/N 46219-02 (230V)

Item Number	Part Number	Quantity	Description
1	90263-03 (3600)	2	DU self-lubricating bearing
2	SA4842 (3600)	As required	Purple Loctite
3	1215 (3600)	2	Allen screw
4	41486-pl (3600)	1	Foot drive tube welded assembly
5	36958 (3600)	As required	Lubricant—sanitary spray
6	41490 (3600)	1	Roller
7	27509 (3600)	1	Roll pin
8	SA3618 (3600)	As required	Blue Loctite
9	44078 (3600)	1	Hilow ball screw
10	SA3351 (3600)	As required	Lithium grease
11	49773 (3600)	1	Fixed brake block
12	40741 (3600)	2	Thrust race
13	44380 (3600)	1	Groove pin
14	11578 (3600)	1	Thrust bearing
15	49772 (3600)	1	Brake spring with lug
16	39247 (3600)	1	Floating brake drum
17	37832 (3600)	1	Brake washer
18	37862 (3600)	1	Bearing end
19	41134 (3600)	1	Bearing brace—plated
20	41107 (3600)	1	Foot spacer—plated
21	43646 (3600)	1	Coupling assembly
22	39913 (3600)	1	Spiral pin
23	41566S (3600)	1	Universal motor kit
24	39922 (3600)	3	Rubber mount
25	19636 (3600)	1	Slotted spring pin
26	34864 (3600)	1	Washer
27	34951 (3600)	1	Spring
28	22322 (3600)	1	Spring washer
29	19678 (3600)	1	Tru-arc ring
30	39611 (3600)	1	Tube stop
31	20802 (3600)	3	Keps nut

Item Number	Part Number	Quantity	Description
32	40818 (3600)	1	Mounting bracket assembly
33	39240-06 (3600)	1	Ground strap assembly
34	18921 (3600)	2	Screw
35	27251 (3600)	4	Washer
36	90018-06 (3600)	4	Hex screw
37	34680 (3600)	4	Screw
38	90245-06 (3600)	1	Screw
39	SA1558 (3600)	1	Foot limit assembly
40	2449 (3600)	2	Washer
41	90037-06 (3600)	2	Screw
42	41398 (3600)	1	Foot ball screw assembly
43	831 (3600)	2	Locknut
44	39560 (3600)	2	Support block
45	90016-48 (3600)	2	Hex bolt
46	42590 (3600)	1	Shear proof pin
47	SA8704 (3600)	1	3-Pin amp Connector
48	30951 (3600)	1	Pin

NOTES:

Cables and Circuit Boards

Figure 5-9. Cables and Circuit Boards

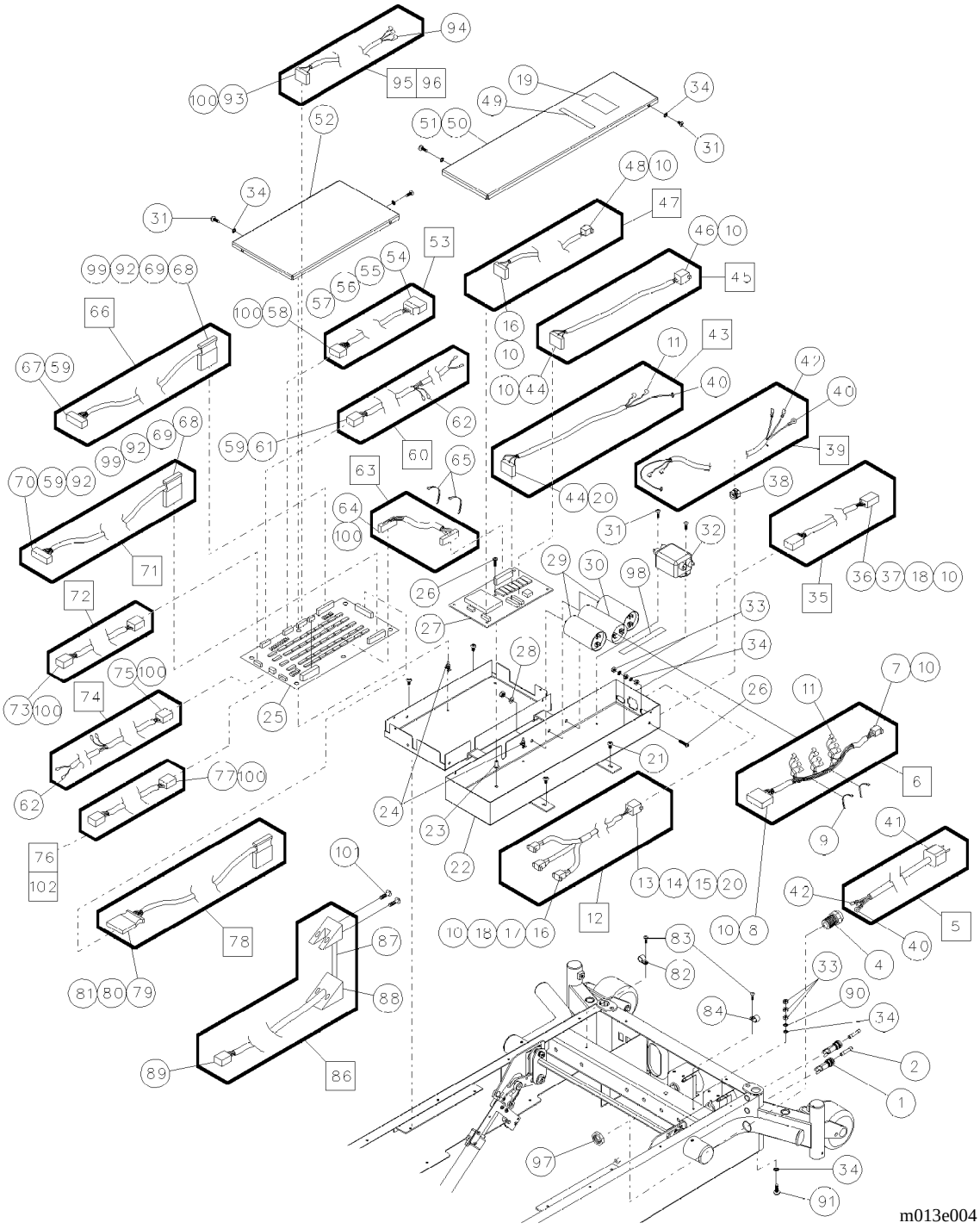

Table 5-19. Cables and Circuit Boards

Item Number	Part Number	Quantity	Description
1	43024-01 (3600)	2	Fuse holder
2	43023-34 (3600)	2	Fuse
3	41436 (3600)	1	Transformer bracket/cable assembly (international beds)
4	39128-02 (3600)	1	Strain relief
5	41433 (3600)	1	Power cord
6	41251 (3600)	1	Motor capacitor harness
7	41276 (3600)	1	Connector plug—9 circuit
8	30967 (3600)	1	Plug housing socket
9	14450 (3600)	2	Small cable tie
10	30950 (3600)	38	Terminal—female
11	41458 (3600)	16	Terminal—flag
12	41431 (3600)	1	Motor harness
13	40011 (3600)	1	Plug—9 circuit
14	41096 (3600)	2	Strain relief
15	90030-07 (3600)	2	Screw
16	30913-01 (3600)	4	Plug housing socket
17	41256 (3600)	6	Strain relief
18	90030-06 (3600)	10	Screw
19	22247 (3600)	1	Caution label
20	30951 (3600)	15	Pin
21	18921 (3600)	4	Screw
22	41492 (3600)	1	Circuit board enclosure
23	47070 (3600)	1	Rivnut
24	35663 (3600)	10	Standoff
25	SA1533 (3600)	1	Control board—digital
26	90058-11 (3600)	2	Screw
27	SA1534 (3600)	1	Control board—bed
28	92 (3600)	3	Lockwasher split steel
29	41447 (3600)	2	Motor capacitor—220V-240V
30	43025 (3600)	1	Motor capacitor—220V
31	23119 (3600)	6	Screw

Item Number	Part Number	Quantity	Description
32	41439-10 (3600)	1	Noise filter
33	28837 (3600)	6	Hex nut
34	23208 (3600)	9	Lockwasher
35	41249 (3600)	1	Nightlight intermediate cable
36	40012 (3600)	2	Plug—2 circuit
37	41419 (3600)	4	Strain relief
38	16145 (3600)	1	Strain relief
39	41255 (3600)	1	Fuse filter cable
40	25647 (3600)	2	Terminal
41	38537 (3600)	1	Plug—power cord
42	30962 (3600)	4	Terminal
43	41432 (3600)	1	Noise filter—bed driver cable
44	30966 (3600)	2	Plug housing socket
45	41254 (3600)	1	Mattress control board cable
46	30914-01 (3600)	1	Capacitor 3 circuit
47	41248 (3600)	1	Nightlight control cable
48	40013 (3600)	1	Capacitor—2 circuit
49	43051 (3600)	1	Temperature control label
50	41232 (3600)	1	Power circuit board cover
51	42591 (3600)	1	Insulator
52	41297 (3600)	1	Digital board cover
53	41425 (3600)	1	Pendant control cable
54	22152 (3600)	1	Female socket
55	36268 (3600)	2	Strain relief
56	16116 (3600)	2	Screw
57	43929 (3600)	7	Female pin
58	30955-08 (3600)	1	Contact housing
59	30952 (3600)	84	Terminal
60	41423 (3600)	1	Trendelenburg mechanism cable
61	30955-04 (3600)	1	Terminal housing
62	34307 (3600)	8	Terminal
63	41428 (3600)	1	Digital bed driver cable

Item Number	Part Number	Quantity	Description
64	30955-18 (3600)	2	Contact housing
65	19124 (3600)	9	Large cable tie
66	41416 (3600)	1	Siderail cable—rh
67	30955-22 (3600)	1	Contact housing
68	42005-25 (3600)	2	Strain relief
69	40008 (3600)	2	Receptacle—25 connector
70	30955-20 (3600)	1	Contact housing—20 pin
71	41418 (3600)	1	Siderail cable - lh
72	41421 (3600)	1	Bed drive limit cable assembly
73	30955-09 (3600)	2	Contact housing
74	41420 (3600)	1	Head drive limit cable
75	30955-03 (3600)	1	Contact housing
76	41422 (3600)	1	Foot drive limit cable
77	30955-07 (3600)	2	Contact housing—single row
78	41429 (3600)	1	Communication cable
79	40879 (3600)	2	Plug—37
80	42005-37 (3600)	2	Strain relief
81	28883 (3600)	74	Pin—male
82	26797 (3600)	1	Cable clamp
83	18252 (3600)	2	Screw
84	38538 (3600)	1	Cable clamp
85	41437-01 (3600)	2 or 3	Rocker switch
86	41426 (3600)	1	Nightlight sensor and cable
87	34309 (3600)	1	Photo-resistor retainer
88	30025 (3600)	1	Photo-resistor
89	30998-02 (3600)	1	Connector housing
90	43551 (3600)	1	Lockwasher
91	18920 (3600)	1	Screw
92	42006 (3600)	4	Screw lock
93	30955-05 (3600)	1	Contact housing
94	41460 (3600)	6	Flag terminal
95	41424 (3600)	0 or 1	Lockouts cable

Item Number	Part Number	Quantity	Description
96	43028 (3600)	0 or 1	Lockout cable
97	39126-02 (3600)	1	Locknut
98	38074 (3600)	1	Capacitor label
99	28966 (3600)	4	Retainer
100	30979 (3600)	32	Terminal receptacle
101	90037-24 (3600)	2	Screw
102	46712 (3600)	1	Foot drive limit cable assembly
103	43610 (3600)	2	Motor capacitor—220V
104	43055 (3600)	1	Motor capacitor—220V

NOTES:

Siderail

Figure 5-10. Siderail

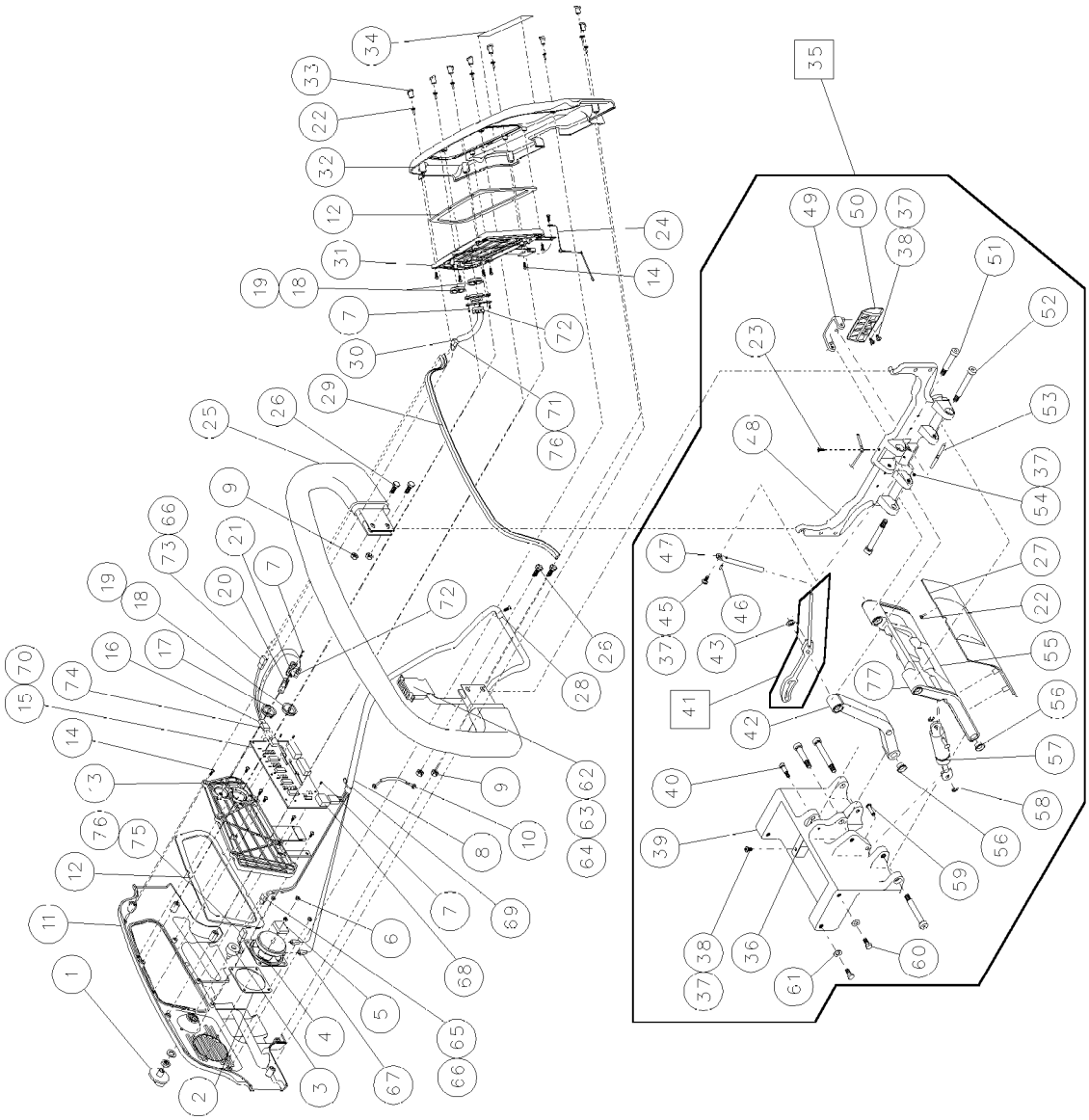

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Table 5-20. Siderail

Item Number	Part Number	Quantity*	Description
1	40963 (3600)	1	Volume knob
2	43047 (3600)	1	Gasket speaker
3	30058 (3600)	1	Audio tape wiring assembly
4	38873 (3600)	1	Speaker
5	38260 (3600)	1	Foam tape
6	28562 (3600)	4	Palnut
7	34683 (3600)	3 or 7	Screw
8	41417 (3600)	1	Cable
9	4435 (3600)	4	Locknut
10	43578 (3600)	1	Ground strap
11			Siderail shroud (see “Siderail Shrouds” on page 5-58)
12	40965 (3600)	1	Gasket—switch package
13			Switch package (see “Siderail Control Switch Units” on page 5-56)
14	90349-05 (3600)	13	Hilow screw
15	40837-01 (3600)	1	Circuit board assembly
16	40943 (3600)	1	Nurse call cable assembly
17	38332-01 (3600)	1	Button—large—clear
18	38332 (3600)	4	Button—large
19	39172 (3600)	As required	Adhesive
20	38334 (3600)	2	Switch holder
21	38329 (3600)	2	Switch retainer
22	90025-05 (3600)	12	Screw
23	17017 (3600)	5	Screw
24	43804 (3600)	1	Ground wire assembly
25	40301 (3600)	1	Top siderail
26	90018-12 (3600)	4	Bolt
27	40962 (3600)	1	Shroud—outer arm
28	38613 (3600)	3	Cable clamp
29	40966 (3600)	1	Gasket—shrouds
30	41021 (3600)	1	Outboard nurse control cable assembly

Item Number	Part Number	Quantity*	Description
31			Switch package (see “Siderail Control Switch Units” on page 5-56)
32			Siderail shroud (see “Siderail Shrouds” on page 5-58)
33	38819 (3600)	8	Siderail plug
34	41696-01 (3600)	1	Warning/caution label
35	46207 (3600)	1	Siderail mechanism assembly
36	46236 (3600)	1	Leaf spring
37	SA3618 (3600)	As required	Blue Loctite
38	26762 (3600)	3	Screw
39	40945 (3600)	1	Pivot bracket deck casting
40	90338-10 (3600)	1	Shoulder screw
41	40919 (3600)	1	Push rod latch and assembly
42	44025 (3600)	1	Center arm assembly
43	12220 (3600)	1	Tru-arc ring
44	SA4842 (3600)	As required	Purple Loctite
45	43049 (3600)	1	Shoulder screw
46	38677 (3600)	1	Roll pin
47	40947 (3600)	1	Push tube
48	40300 (3600)	1	Siderail subframe casting
49	42596 (3600)	1	Bracket—siderail handle
50	47088 (3600)	1	Handle, siderail
51	90259-24 (3600)	2	Shoulder screw
52	90259-36 (3600)	4	Shoulder screw
53	40820 (3600)	1	Drill pin
54	90101-02 (3600)	1	Setscrew
55	40936 (3600)	1	Outer arm casting
56	9026308 (3600)	12	DU bearing
57	40952 (3600)	1	Dampener—extension
58	41465 (3600)	2	E-ring
59	40806 (3600)	2	Clevis pin
60	42889 (3600)	4	Hex bolt
61	35667 (3600)	4	Washer

Item Number	Part Number	Quantity*	Description
62	40895 (3600)	1	Plug—25 pin
63	42005-25 (3600)	1	Strain relief
64	30979 (3600)	13	Terminal receptacle
65	30931 (3600)	1	Plug housing—3 circuit
66	43930 (3600)	5	Male pin
67	34307 (3600)	2	Terminal
68	30972-16 (3600)	1	Contact housing
69	14450 (3600)	2	Small cable tie
70	40840-01 (3600)	1	Circuit board assembly
71	30927 (3600)	1	Receptacle housing
72	31767 (3600)	2	Nurse call switch
73	29815 (3600)	1	Plug 2 position
74	30955-04 (3600)	1	Terminal housing
75	30926 (3600)	1	Receptacle housing
76	43929 (3600)	2	Female pin
77	43807 (3600)	1	Shroud—siderail mechanism

NOTE:
*The quantities shown in table 5-20 on page 5-53 are per siderail.

Siderail Control Switch Units

Table 5-21. Siderail Control Switch Units (Versions “A”, “B”, and “C”)

Siderail Option	LH Siderail		RH Siderail	
	Inner	Outer	Inner	Outer
00	40614-00 (3600)	40616-00 (3600)	40615-00 (3600)	40617-00 (3600)
03	40614-03 (3600)	40616-03 (3600)	40615-03 (3600)	45951-03 (3600)
07	45948-07 (3600)	40616-07 (3600)	40615-07 (3600)	40617-07 (3600)
08	None	None	None	None
09	40614-09 (3600)	40616-09 (3600)	40615-09 (3600)	40617-09 (3600)
Faceplate disk	93V222 (3600)	93V222 (3600)	93V222 (3600)	93V222 (3600)

Table 5-22. Siderail Control Switch Units (Version “D”)

Siderail Option	LH Siderail		RH Siderail	
	Inner	Outer	Inner	Outer
00	45948-00 (3600)	45950-00 (3600)	45949-00 (3600)	45951-00 (3600)
03	45948-03 (3600)	45950-03 (3600)	45949-03 (3600)	45951-03 (3600)
07	45948-07 (3600)	45950-07 (3600)	45949-07 (3600)	45951-07 (3600)
08	None	None	None	None
09	45948-09 (3600)	45950-09 (3600)	45949-09 (3600)	45951-09 (3600)
Faceplate disk	93V222 (3600)	93V222 (3600)	93V222 (3600)	93V222 (3600)

NOTES:

Siderail Shrouds

Table 5-23. Siderail Shrouds

Siderail Option	LH Siderail		RH Siderail	
	Inner	Outer	Inner	Outer
00	41160-09 (3600)	40968-01 (3600)	41161-09 (3600)	40967-01 (3600)
03	41154 (3600)	40968-01 (3600)	41155 (3600)	40967-01 (3600)
07	41154 (3600)	40968-01 (3600)	41155 (3600)	40967-01 (3600)
08	41160-08 (3600)	40968-08 (3600)	41161-08 (3600)	40967-08 (3600)
09	41160-09 (3600)	40968-01 (3600)	41161-09 (3600)	40967-01 (3600)

NOTES:

Siderail Assembly Complete

Table 5-24. Siderail Assembly Complete—"A" Version Only

Siderail Option	LH Siderail	RH Siderail
00	41157-00 (3600)	41158-00 (3600)
03	41157-03 (3600)	41158-03 (3600)
07	41157-07 (3600)	41158-07 (3600)
08	41157-08 (3600)	41158-08 (3600)
09	41157-09 (3600)	41158-09 (3600)

Table 5-25. Siderail Assembly Complete—"B" and "C" Version Only

Siderail Option	LH Siderail	RH Siderail
00	44027-00 (3600)	44028-00 (3600)
03	44027-03 (3600)	44028-03 (3600)
07	44027-07 (3600)	44028-07 (3600)
08	44027-08 (3600)	44028-08 (3600)
09	44027-09 (3600)	44028-09 (3600)

Table 5-26. Siderail Assembly Complete—"D" Version Only

Siderail Option	LH Siderail	RH Siderail
00	45946-00 (3600)	45947-00 (3600)
03	45946-03 (3600)	45947-03 (3600)
07	45946-07 (3600)	45947-07 (3600)
08	45946-08 (3600)	45947-08 (3600)
09	45946-09 (3600)	45947-09 (3600)

NOTES:

Foot Section Module

Figure 5-11. Foot Section Module

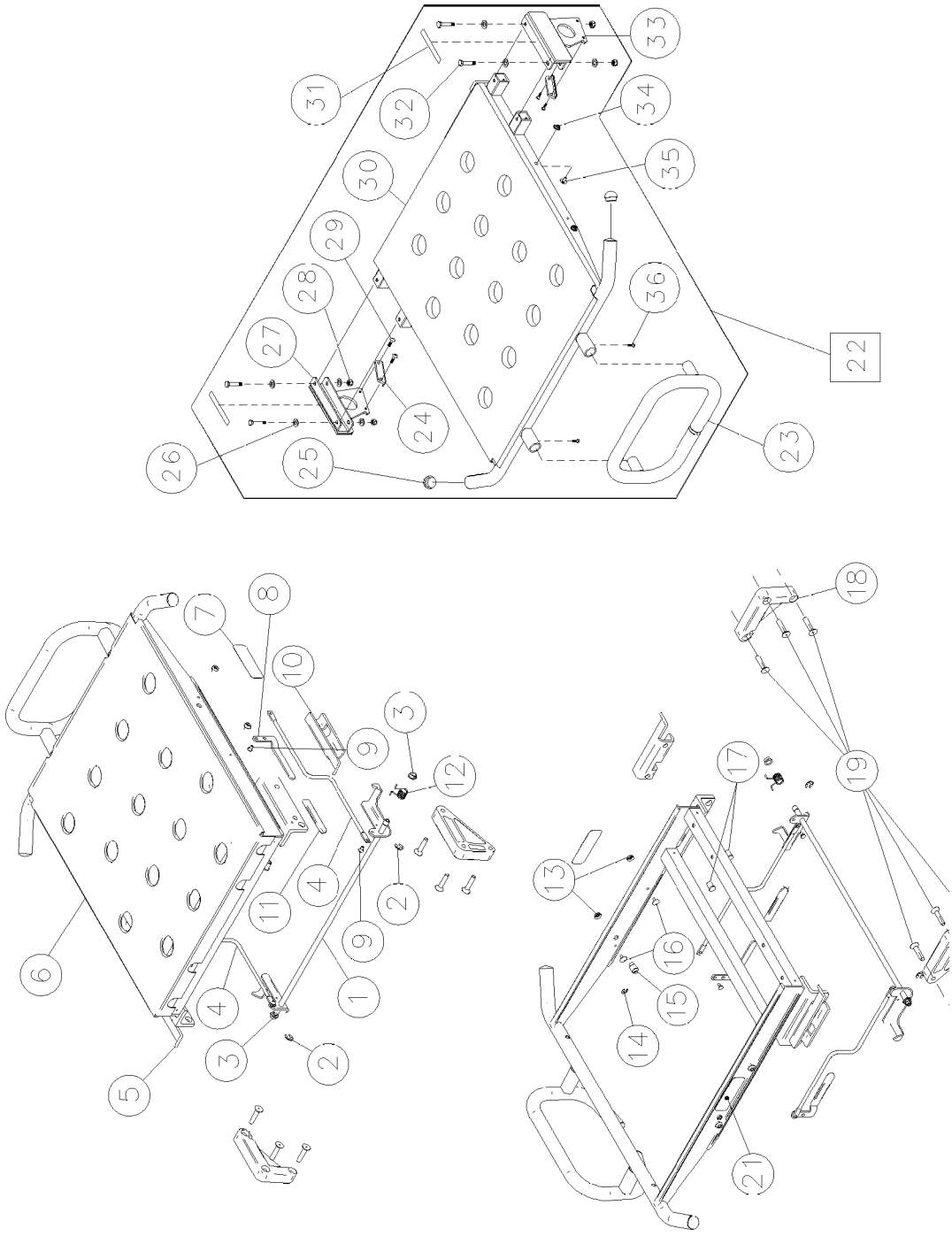

Table 5-27. Foot Section Module

Item Number	Part Number	Quantity	Description
1	61521 (3600)	1	Latch weldment
2	35326 (3600)	2	E-ring—3/8
3	61525 (3600)	2	Bearing
4	61529 (3600)	2	Connecting rod
5	61528 (3600)	1	Channel—lh
6	61514 (3600)	1	Foot section weldment
7	6153501 (3600)	1	Label foot release rh
8	61530pl (3600)	2	Release handle
9	61531pl (3600)	4	Link rivet
10	61527 (3660)	1	Channel—rh
11	61533 (3600)	2	Vinyl cap
12	61534 (3600)	1	Non-corrosive torsion spring
13	41052 (3600)	4	Stud snap
14	41465 (3600)	2	E-ring—1/4
15	61532 (3600)	2	Pivot stud
16	40959 (3600)	4	Eyelet
17	61526pl (3600)	4	Rivet
18	61536 (3600)	1	Side bracket—rh
19	42574 (3600)	6	Screw
20	61537 (3600)	1	Side bracket—lh
21	6153502 (3600)	1	Label foot release lh
22	46206 (3600)	1	Foot section frame assembly
23	41209 (3600)	1	Foot section stand
24	41104 (3600)	2	Foot section bumper
25	41201S (3600)	2	Foot end plug
26	1012 (3600)	10	Washer
27	41203 (3600)	1	Latch—rh
28	4435 (3600)	4	Locknut
29	90058-06 (3600)	4	Screw
30	46206 (3600)	1	Foot section frame assembly
31	42609 (3600)	2	Foot latch label

Item Number	Part Number	Quantity	Description
32	90018-28 (3600)	6	Hex head cap screw
33	41204 (3600)	1	Latch—lh
34	41052 (3600)	4	Stud snap
35	40959 (3600)	4	Eyelet
36	90245-06 (3600)	2	Screw

NOTES:

Foot Support Assembly

Figure 5-12. Foot Support Assembly

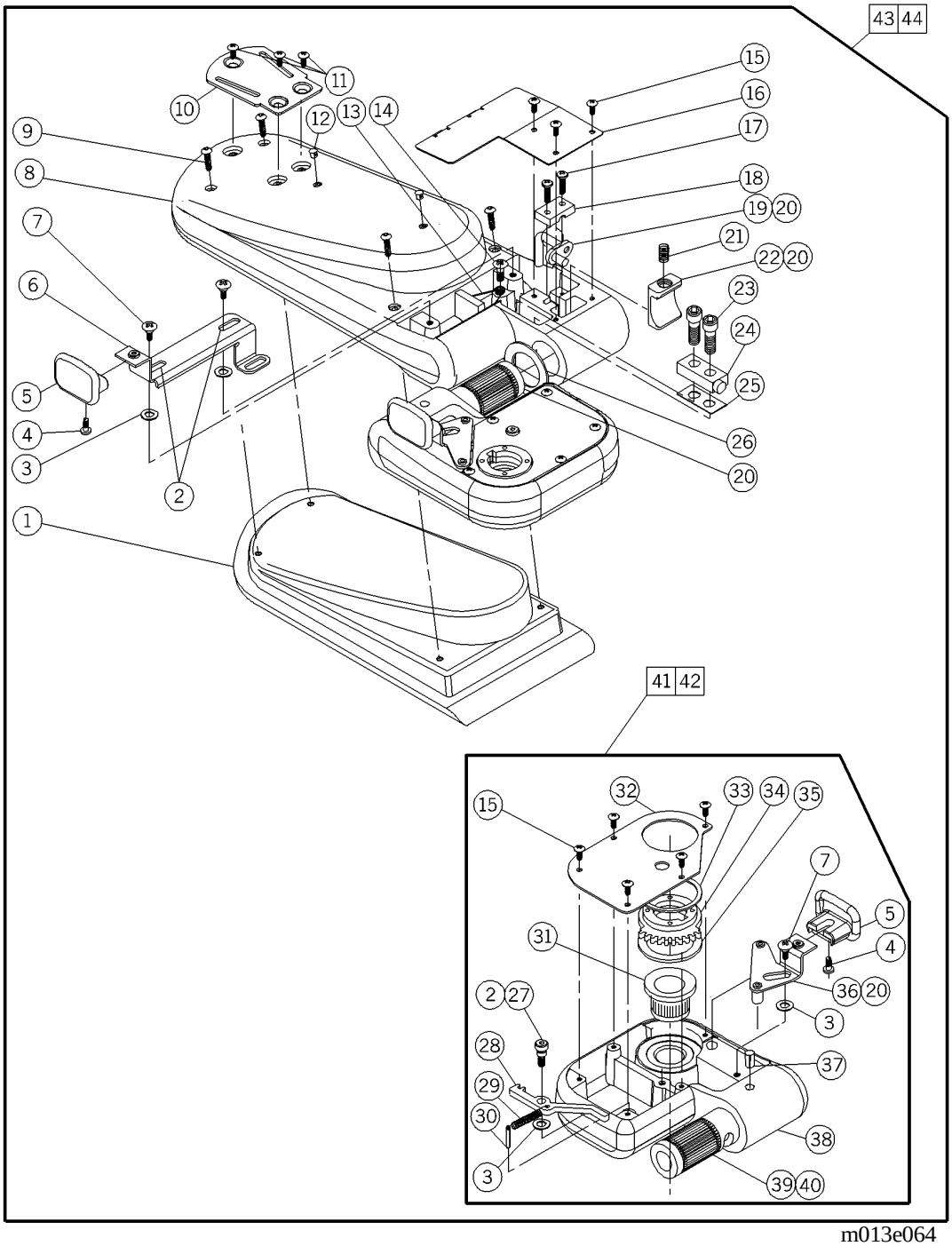

Table 5-28. Foot Support Assembly

Item Number	Part Number	Quantity	Description
1	41235 (3600)	1	Foot pad—rh
2	43772 (3600)	As required	Lithium base grease
3	10429 (3600)	7	Washer
4	90037-06 (3600)	3	Screw
5	47087 (3600)	4	Pull handle
6	44781 (3600)	1	Vertical pull—rh
7	43049 (3600)	3	Shoulder screw
8	40997 (3600)	1	Foot rest—rh
9	90188-10 (3600)	4	Screw
10	45041 (3600)	1	Support bracket assembly
11	40999 (3600)	3	Screw
12	41454 (3600)	2	Hole plug
13	41179 (3600)	1	Torsion spring
14	39345 (3600)	1	Shoulder screw
15	43857 (3600)	8	Screw
16	44779 (3600)	1	Vertical plate—rh
17	90027-08 (3600)	2	Screw
18	40921 (3600)	1	Bushing block
19	40950 (3600)	1	Release assembly—rh
20	37929 (3600)	As required	Anti-seize
21	41180 (3600)	2	Spring
22	40920 (3600)	1	Piston
23	90161-14 (3600)	2	Cap screw
24	41133 (3600)	1	Stop
25	43760 (3600)	1	Ratchet shim
26	41117 (3600)	1	Spacer
27	90338-04 (3600)	1	Shoulder screw
28	41172 (3600)	1	Lever
29	41164 (3600)	1	Lever spring
30	10640 (3600)	1	Roll pin
31	41046 (3600)	1	Support post insert

Item Number	Part Number	Quantity	Description
32	40929 (3600)	1	Base plate
33	41119 (3600)	1	Cam washer
34	41404 (3600)	1	Base cam—rh
35	40993 (3600)	1	Plastic washer
36	45054s (3600)	1	Horizontal pull assembly—rh
37	41129 (3600)	1	Groove pin
38	41130 (3600)	1	Foot base casting—rh
39	60362 (3600)	1	Ratchet shaft rh
40	37928 (3600)	As required	Loctite #609
41	46212 (3600)	1	Foot base assembly lh
42	46214 (3600)	1	Foot base assembly rh
43	46211 (3600)	1	Foot support lh
44	46213 (3600)	1	Foot support rh

NOTES:

Calf Support—P3616

Figure 5-13. Calf Support—P3616

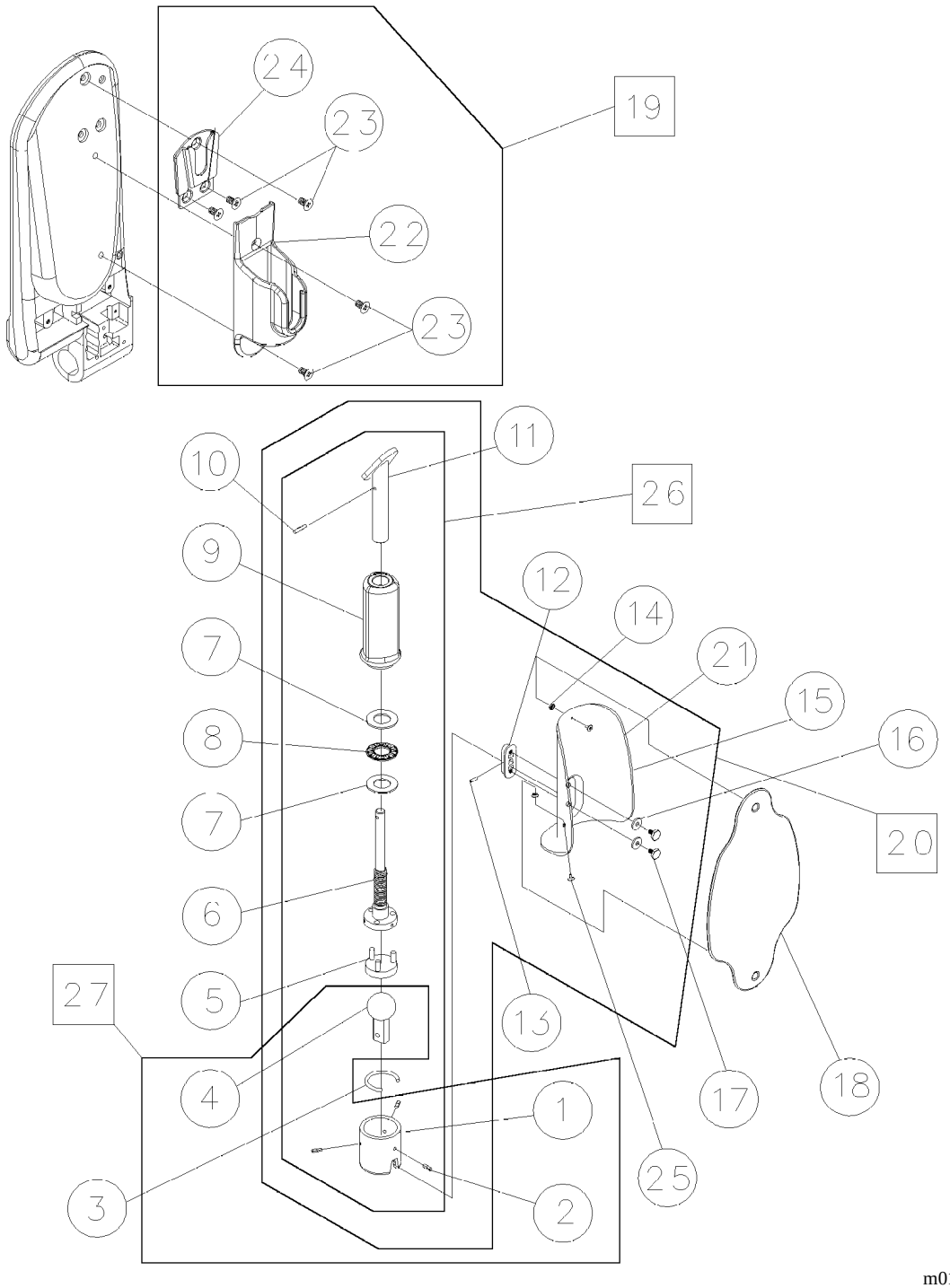

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Table 5-29. Calf Support—P3616

Item Number	Part Number	Quantity	Description
1	49799 (3600)	1	Housing
2	41185 (3600)	3	Groove pin
3	40765 (3600)	1	Knuckle ring
4	47598 (3600)	1	Ball and rod
5	47597 (3600)	1	Ball jam
6	60134 (3600)	1	Shaft insert assembly
7	40741 (3600)	2	Thrust race
8	11578 (3600)	1	Thrust bearing
9	40762 (3600)	1	Handle
10	41125 (3600)	1	Groove pin
11	40980 (3600)	1	Support tube weldment
12	41259 (3600)	1	Calf support bracket
13	128 (3600)	1	Roll pin
14	40959 (3600)	2	Eyelet
15	41260 (3600)	1	Calf support shell
16	19918 (3600)	2	Washer
17	19224 (3600)	2	Bolt
18	41097 (3600)	1	Cover assembly
19	SA1556 (3600)	1	Calf support storage kit
20	47601s (3600)	1	Calf support assembly
21	41052 (3600)	2	Stud snap
22	41261 (3600)	1	Calf support holster
23	40999 (3600)	5	Screw
24	45041 (3600)	1	Support bracket assembly
25	40959 (3600)	2	Eyelet
26	47600 (3600)	1	Calf support assembly
27	SA1634 (3600)	1	Ball socket repair kit

Air System—P/N 41048 (Old Style)

Figure 5-14. Air System—P/N 41048 (Old Style)

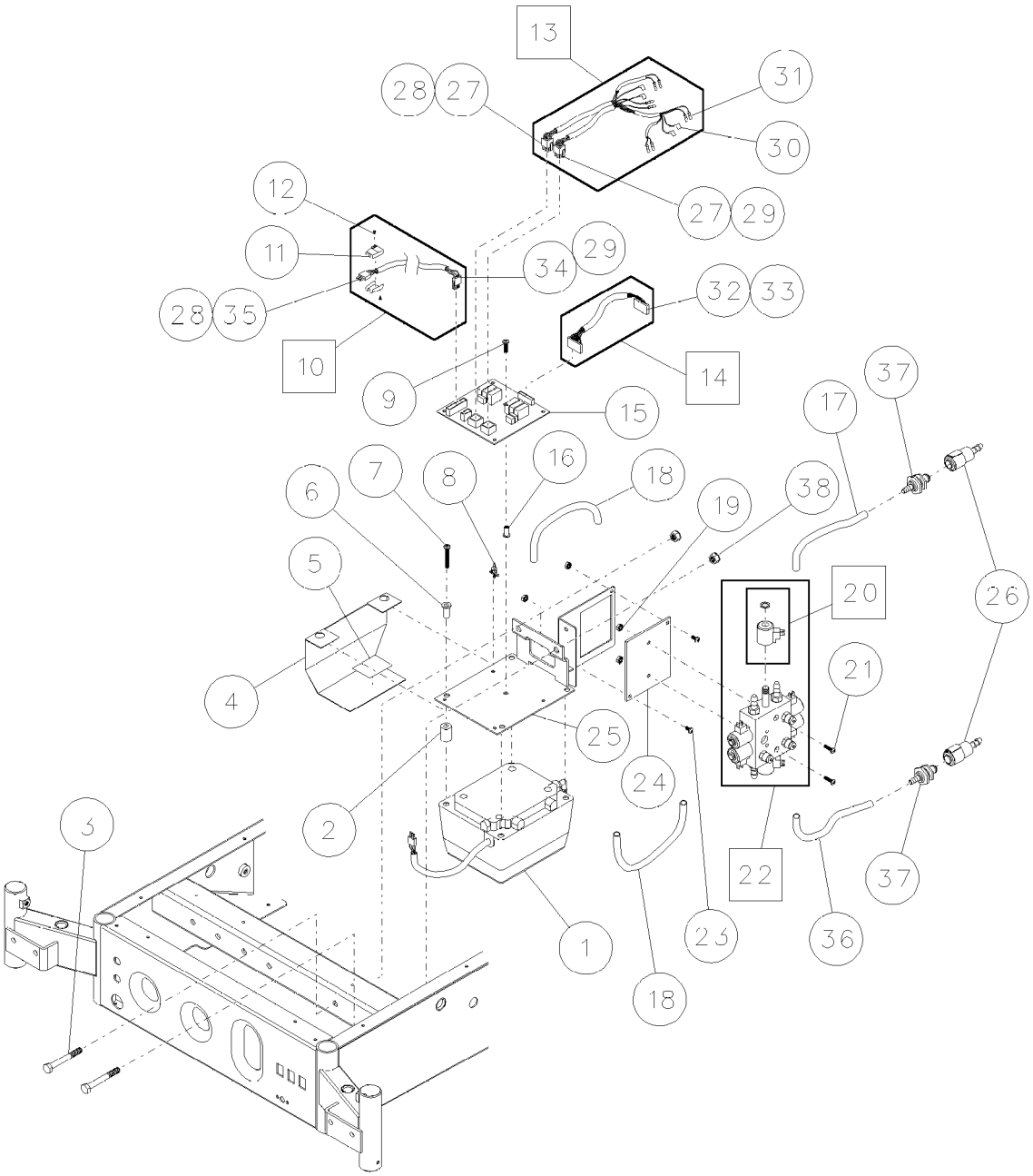

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Table 5-30. Air System—P/N 41048 (Old Style)

Item Number	Part Number	Quantity	Description
1	41402 (3600)	1	Air compressor
2	43035 (3600)	4	Spacer
3	90016-40 (3600)	2	Hex head machine bolt
4	43057 (3600)	1	Fiche paper
5	40827 (3600)	1	Dual sided tape
6	41076 (3600)	4	Spacer
7	42570 (3600)	4	Screw
8	35663 (3600)	4	Standoff
9	90058-11 (3600)	1	Screw
10	41434 (3600)	1	Mattress power cable assembly
11	41256 (3600)	2	Strain relief
12	90030-06 (3600)	2	Screw
13	41435 (3600)	1	Solenoid power cable assembly
14	41427 (3600)	1	Digital mattress board cable
15	41188-01 (3600)	1	Circuit board assembly—mattress driver
16	35511 (3600)	1	Rivnut
17	15250 (3600)	4	Locknut washer base
18	42587 (3600)	2	Tubing
19	831 (3600)	2	Locknut
20	SA4475 (3600)	6	Solenoid
21	90027-10 (3600)	2	Screw
22	41414 (3600)	1	Manifold
23	17017 (3600)	2	Screw
24	41461 (3600)	1	Plastic isolator plate
25	41451 (3600)	1	Mounting bracket
26	SA7079 (3600)	2	Female air coupling
27	40011 (3600)	2	Plug—9 circuit
28	30951 (3600)	9	Pin
29	30950 (3600)	9	Terminal—female
30	36119 (3600)	4	Terminal
31	30983 (3600)	8	Terminal—fast on

Item Number	Part Number	Quantity	Description
32	30955-12 (3600)	2	Pin housing
33	30979 (3600)	20	Terminal receptacle
34	30966 (3600)	1	Plug housing socket
35	30913-01 (3600)	1	Plug housing socket
36	42586-01 (3600)	1	Hose—lh (seat mattress)
37	41466 (3600)	2	1/4" male coupling
38	42585-01 (3600)	1	Hose—rh (lumbar pad)

NOTES:

Air Module—P/N 46976S (New Style)

Figure 5-15. Air Module—P/N 46976S (New Style)

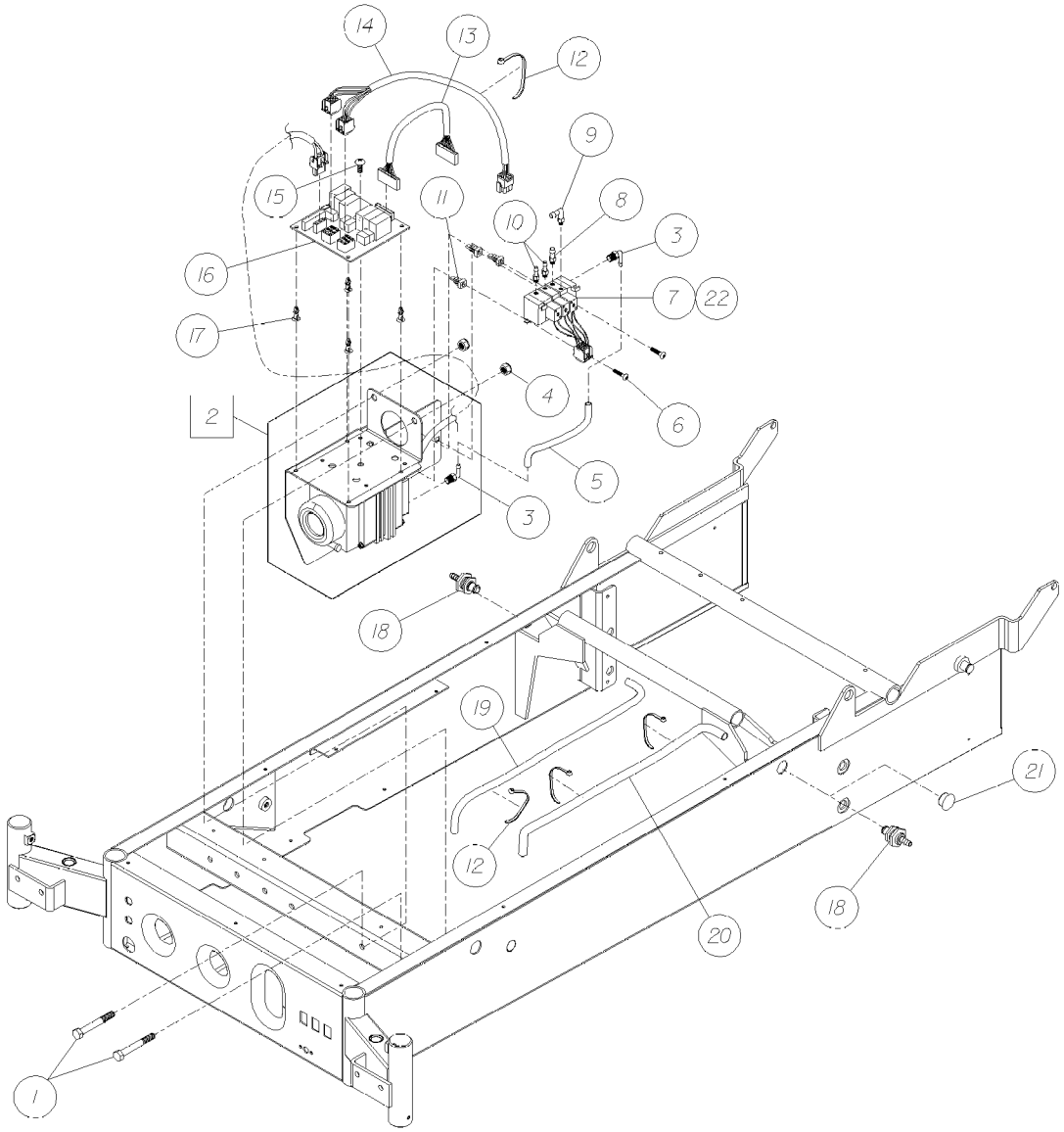

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Table 5-31. Air Module—P/N 46976S (New Style)

Item Number	Part Number	Quantity	Description
1	90016-40 (3600)	2	Hex head machine bolt
2	SA1627 (3600)	1	Air compressor with bracket
3	47124 (3600)	2	Elbow fitting
4	831 (3600)	2	Locknut
5	4698006 (3600)	1	Hose
6	15380 (3600)	2	Screw
7	47105-01 (3600)	1	3 station manifold
8	SA8576 (3600)	1	Straight fitting
9	SA8577 (3600)	1	Elbow fitting
10	SA8575 (3600)	2	Straight fitting
11	46981 (3600)	3	Standoff
12	19124 (3600)	4	Large cable tie
13	41427 (3600)	1	Digital mattress board cable
14	46977 (3600)	1	Solenoid power cable assembly
15	90058-11 (3600)	1	Screw
16	41188-01 (3600)	1	Circuit board assembly—mattress driver
17	35663 (3600)	4	Standoff
18	41466 (3600)	2	Male coupling
19	46980-35 (3600)	1	Hose—rh (lumbar seat)
20	46980-41 (3600)	1	Hose—lh (seat mattress)
21	38156 (3600)	2	Hole plug
22	47105-02 (3600)	1	3 station manifold

Headboard—P3617

Figure 5-16. Headboard—P3617

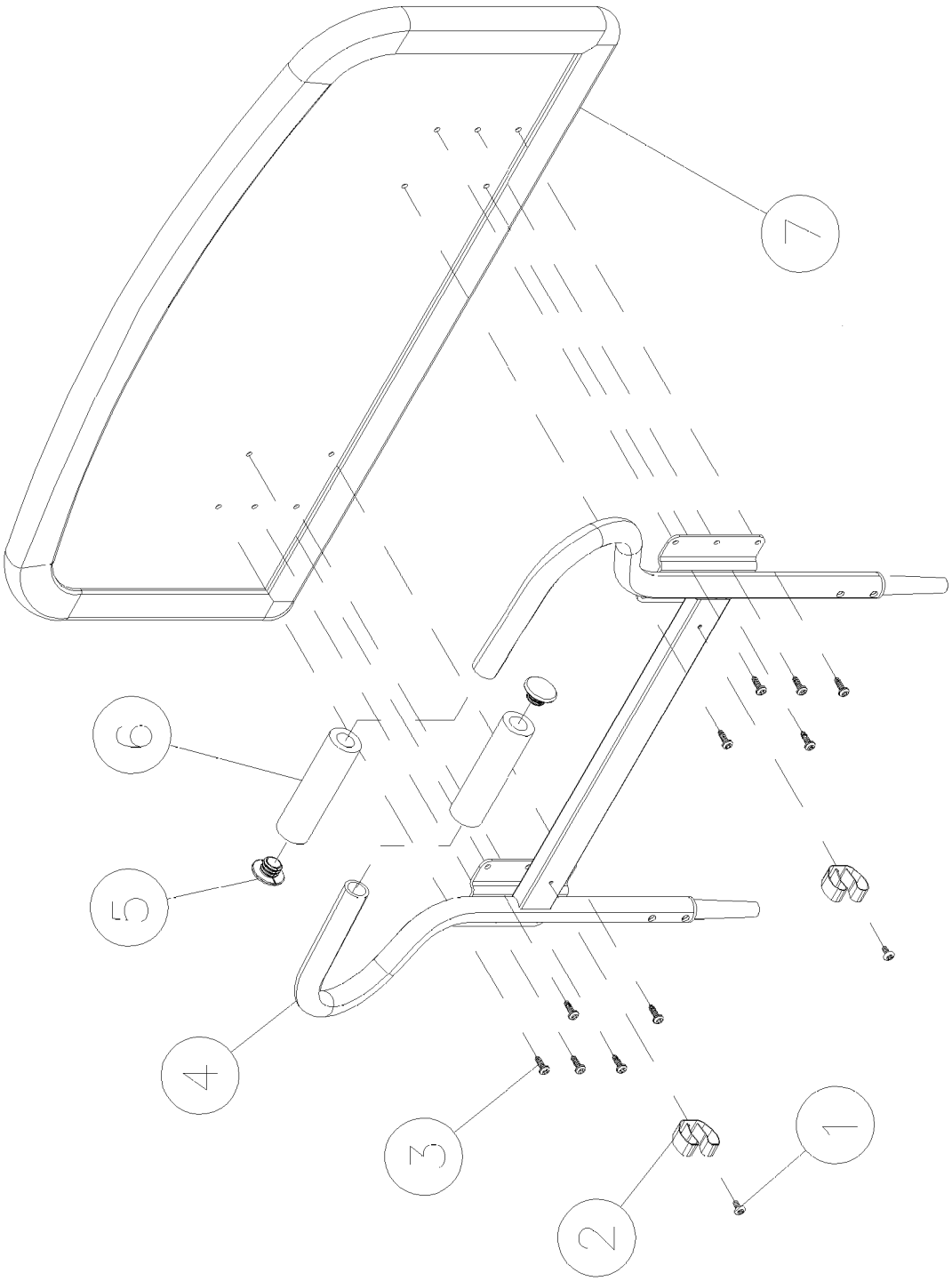

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Table 5-32. Headboard—P3617

Item Number	Part Number	Quantity	Description
1	18921 (3600)	2	Screw
2	37664 (3600)	2	IV clip
3	31773 (3600)	10	Screw
4	40995 (3600)	1	Handle assembly
5	42600 (3600)	2	Plug
6	42588 (3600)	2	Foam handle grip
7	41114 (3600)†	1	Wood headboard
8	112770-H50 (3600)†	1	Wood headboard (Freedom Hill models)
9	112769-H4C (3600)†	1	Wood headboard (Liberty Hill models)

† Specify wood finish.

Mattress Replacement Parts

Table 5-33. Mattress Replacement Parts

Part Number	Quantity	Description
46226-C (3600)	1	U-cut head, seat air mattress
4622602 (3600)	1	U-cut head air mattress
46225-C (3600)	1	V-cut head air mattress
46225-E (3600)	1	V-cut air head mattress
46228-C (3600)	1	V-cut foam head, seat mattress
46228-E (3600)	1	Flame retardant u-cut head mattress
46227-C (3600)	1	V-cut foam head, seat mattress
46227-E (3600)	1	Flame retardant v-cut head mattress
46230-1C (3600)	1	U-cut foot mattress—4" (102 mm)
46230-C (3600)	1	U-cut foot mattress—3" (76.2 mm)
46230-E (3600)	1	Flame retardant u-cut foot mattress
46229-1C (3600)	1	V-cut foot mattress—4" (102 mm)
46229-C (3600)	1	V-cut foot mattress—3" (76.2 mm)
46229-E (3600)	1	Flame retardant v-cut foot mattress
B7831 (3600)	20 per case	Delivery drape—32" x 58" (813 mm x 1473 mm)
SA6603 (3600)	40 per case	Labor/delivery mattress drape—32" x 29" (813 mm x 736 mm)
SA4462 (3600)	1	Female coupling—sleep surface

NOTES:

Circuit Board—Digital—P/N SA1533

Figure 5-17. Circuit Board—Digital—P/N SA1533

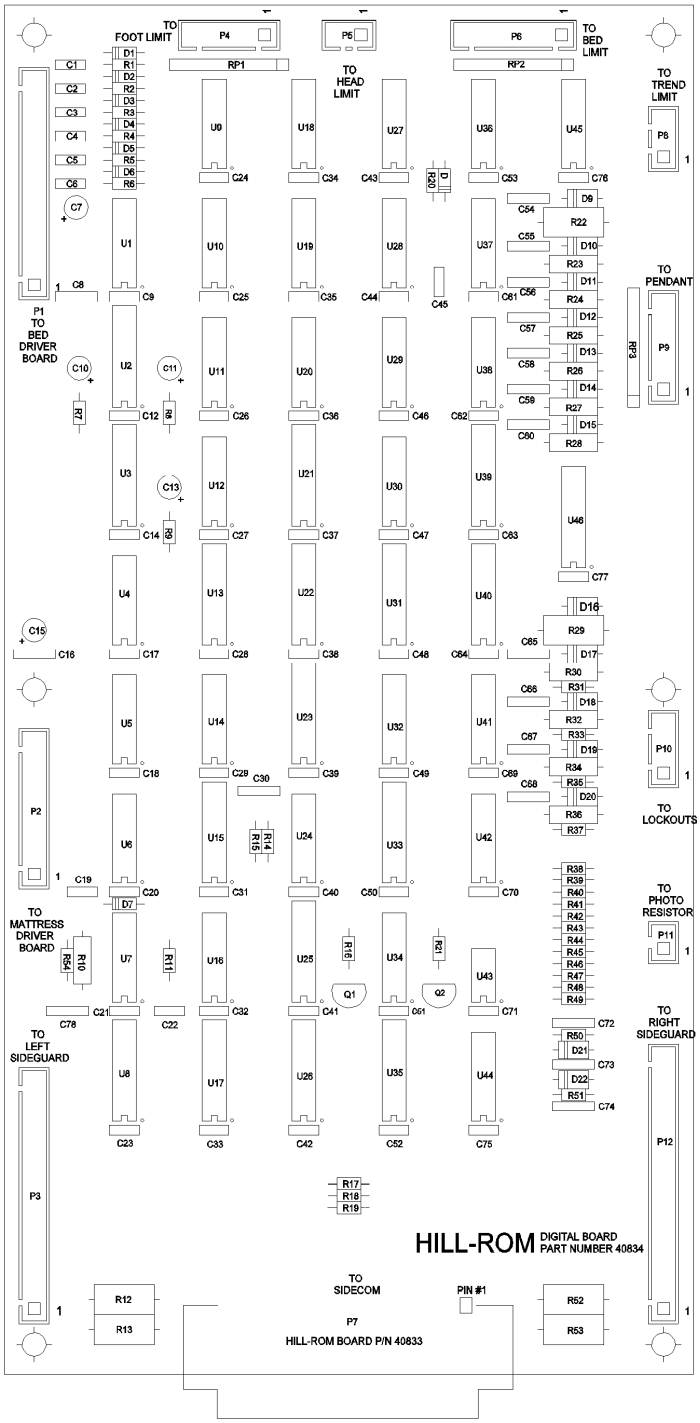

Table 5-34. Circuit Board—Digital—P/N SA1533

Component Symbol	Part Number	Description
C1 through C6, C12, C14, C17 through C29, C31 through C53, C61 through C64, C69 through C71, C75 through C77	SA4714 (3600)	Capacitor
C7, C15	SA4748 (3600)	Capacitor
C8, C16	SA4749 (3600)	Capacitor
C10, C13	SA4750 (3600)	Capacitor
C11	30129-105K (3600)	Capacitor
C30, C54 through C60, C65 through C68, C72 through C74	SA4752 (3600)	Capacitor
C78	SA4753 (3600)	Capacitor
D1 through D7	SA4754 (3600)	Diode
D9, D16, D21, D22	SA4755 (3600)	Diode
D10 through D15, D17 through D20	SA4756 (3600)	Diode
P1	SA4757 (3600)	Connector
P2	SA4758 (3600)	Connector
P3	SA4759 (3600)	Connector
P4	SA4760 (3600)	Connector
P5	SA4761 (3600)	Connector
P6	SA4762 (3600)	Connector
P7	SA4763 (3600)	Connector
P8	SA4764 (3600)	Connector
P9	SA4765 (3600)	Connector
P10	SA4766 (3600)	Connector
P11	SA4767 (3600)	Connector
P12	SA4768 (3600)	Connector
Q1, Q2	SA4769 (3600)	Transistor
R1 through R6	SA4770 (3600)	Resistor
R7, R9	SA4771 (3600)	Resistor
R8	SA4772 (3600)	Resistor
R10	SA4773 (3600)	Resistor

Component Symbol	Part Number	Description
R11	SA4774 (3600)	Resistor
R12, R52	SA4775 (3600)	Resistor
R13, R22, R29, R53	SA4776 (3600)	Resistor
R14, R15	SA4777 (3600)	Resistor
R16, R21, R31, R33, R35, R37	SA4780 (3600)	Resistor
R17, R18, R19	SA4738 (3600)	Zero ohm resistor
R20, R48, R49	SA4778 (3600)	Resistor
R23 through R28, R30, R32, R34, R36	SA4779 (3600)	Resistor
R38	SA4781 (3600)	Resistor
R39	SA4782 (3600)	Resistor
R40, R45	SA4783 (3600)	Resistor
R41, R42	SA4784 (3600)	Resistor
R43, R44	SA4785 (3600)	Resistor
R46, R47	SA4786 (3600)	Resistor
R50, R51	SA4787 (3600)	Resistor
R54	SA4788 (3600)	Resistor
RP1, RP2	SA4789 (3600)	Resistor
RP3	SA4790 (3600)	Resistor
U1, U28, U29, U38, U41, U42	SA4791 (3600)	Integrated circuit
U2, U3	SA4792 (3600)	Integrated circuit
U4, U11, U19, U24, U27, U32, U34, U45	SA4793 (3600)	Integrated circuit
U5, U6, U14, U20, U37, U44	SA4794 (3600)	Integrated circuit
U7	SA4795 (3600)	Integrated circuit
U8, U35	SA4796 (3600)	Integrated circuit
U9, U10	SA4797 (3600)	Integrated circuit
U12, U30	SA4798 (3600)	Integrated circuit
U13, U21, U23, U26, U31, U39	SA4799 (3600)	Integrated circuit
U15	SA4800 (3600)	Integrated circuit
U16	SA4801 (3600)	Integrated circuit
U17, U22, U40, U46	SA4802 (3600)	Integrated circuit

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Component Symbol	Part Number	Description
U18	SA4803 (3600)	Integrated circuit
U25, U33	SA4804 (3600)	Integrated circuit
U36	SA4805 (3600)	Integrated circuit
U43	SA4806 (3600)	Integrated circuit

NOTE:
To ensure equal quality in your P.C. board, replacement components should always be of the same manufacturer and part number as originally installed on the board.

Circuit Board Assembly—Bed Drive and Rectifier—P/N 40843-02

Figure 5-18. Circuit Board Assembly—Bed Drive and Rectifier—P/N 40843-02

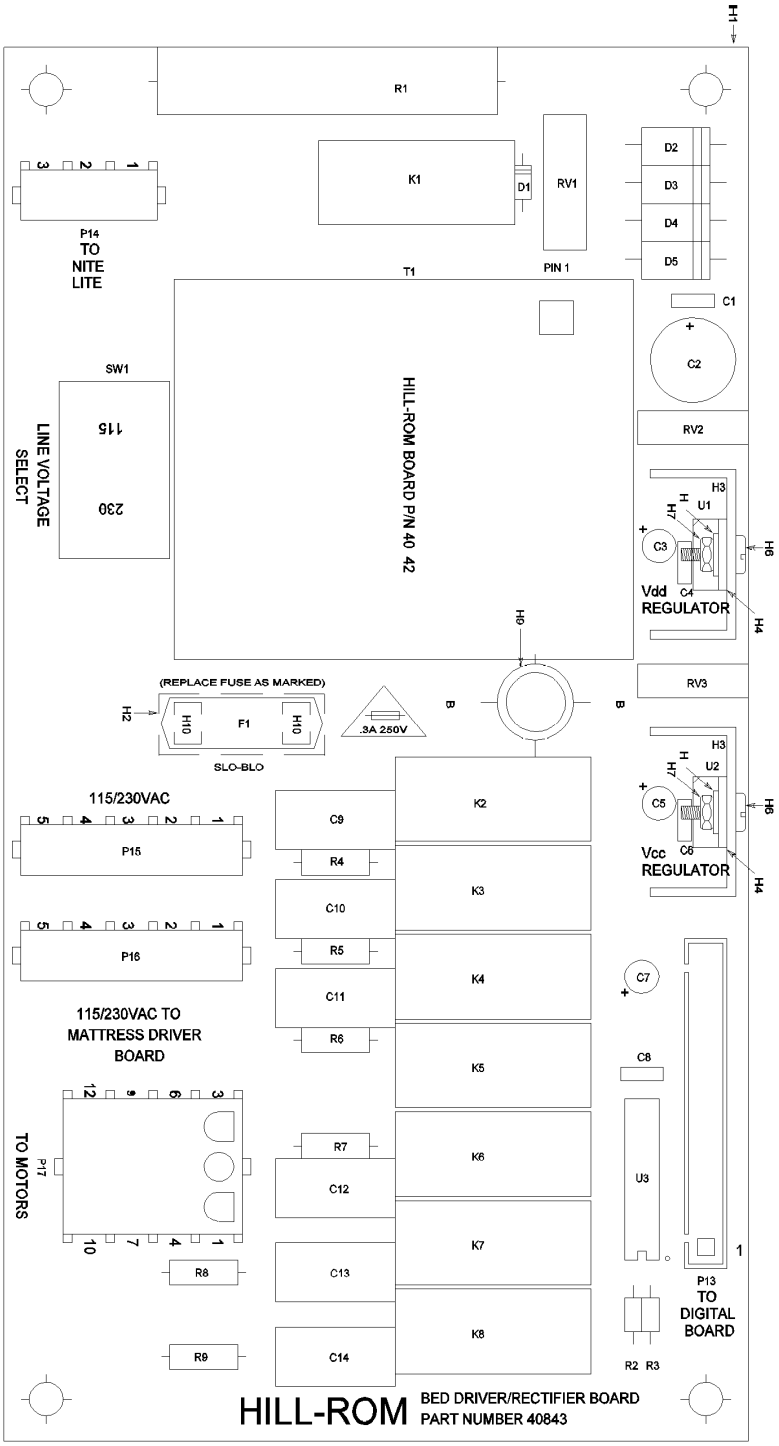

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Table 5-35. Circuit Board Assembly—Bed Drive and Rectifier—P/N 40843-02

Component Symbol	Part Number	Description
C1, C4, C6, C8	SA4714 (3600)	Capacitor
C2	SA4727 (3600)	Capacitor
C3, C5	SA4715 (3600)	Capacitor
C7	SA4716 (3600)	Capacitor
C9 through C14	SA4726 (3600)	Capacitor
D1	SA4728 (3600)	Diode
D2 through D5	SA4729 (3600)	Diode
F1	43143-01 (3600)	Fuse
H2	SA4691 (3600)	Fuse cover
H5	SA4692 (3600)	Sheet metal screw
H6	SA4693 (3600)	Screw
H7	SA4694 (3600)	Hex nut
H8	SA4696 (3600)	Lockwasher
H9	SA4697 (3600)	Eyelet
H10	SA4698 (3600)	Fuse clip
K1 through K8	30702 (3600)	Relay
P13	SA4731 (3600)	Connector
P14	SA4732 (3600)	Connector
P15	SA4733 (3600)	Connector
P16	SA4734 (3600)	Connector
P17	SA4735 (3600)	Connector
R1	SA4737 (3600)	Resistor
R2, R3	SA4738 (3600)	Zero ohm resistor
R4 through R9	SA4739 (3600)	Resistor
RV1	30026-02 (3600)	Thermistor
RV2, RV3	SA4741 (3600)	Thermistor
SW1	SA4742 (3600)	Switch
T1	30614 (3600)	Transformer
U1	SA4744 (3600)	Voltage regulator
U2	SA4745 (3600)	Voltage regulator

Component Symbol	Part Number	Description
U3	30414-2803A (3600)	Integrated circuit

NOTE:
To ensure equal quality in your P.C. board replacement, components should always be of the same manufacturer and part number as originally installed on the board.

NOTES:

Circuit Board Assembly—RH Siderail Controls—P/N 4083701

Figure 5-19. Circuit Board Assembly—RH Siderail Controls—P/N 4083701

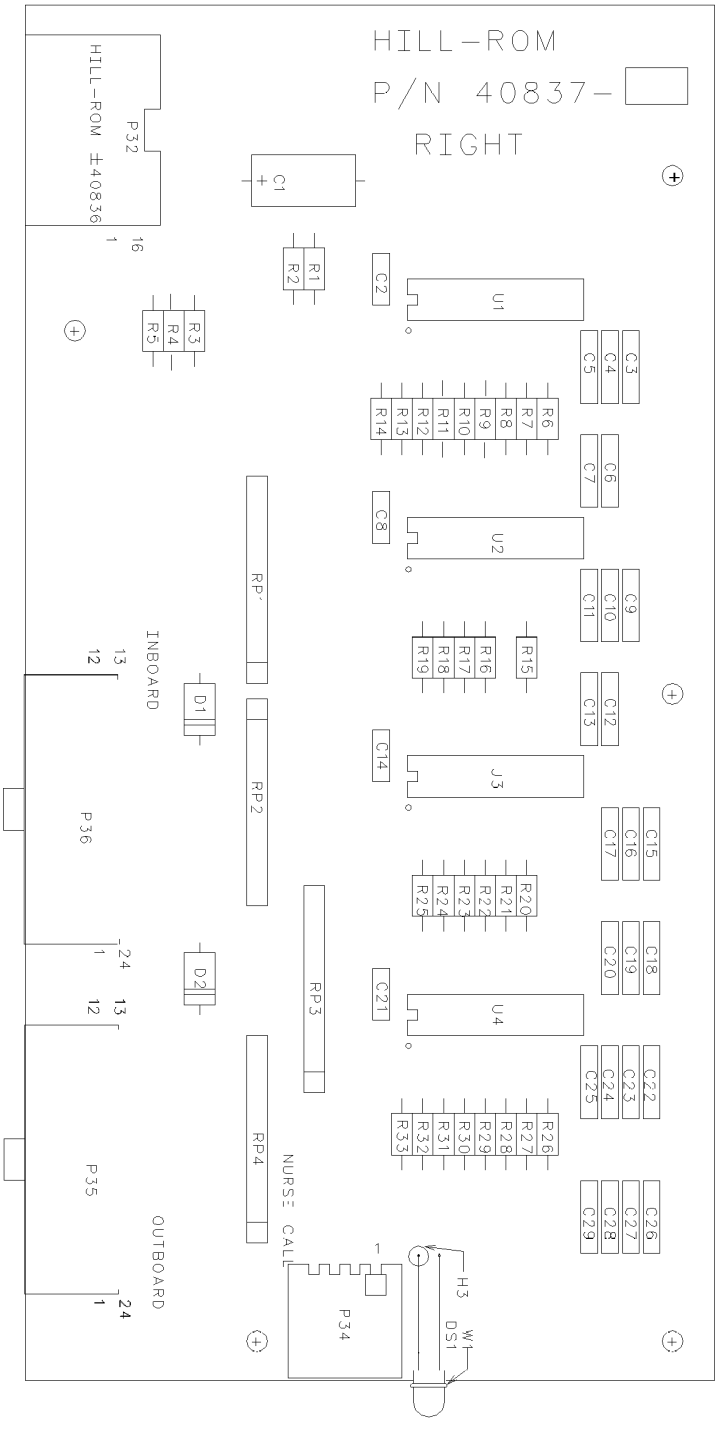

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Table 5-36. Circuit Board Assembly—RH Siderail Controls—P/N 4083701

Component Symbol	Part Number	Description
C1	SA4813 (3600)	Capacitor
C2, C8, C14, C21	SA4714 (3600)	Capacitor
C3 through C7, C9 through C29	SA4752 (3600)	Capacitor
D1, D2	SA4755 (3600)	Diode
DS1	SA4815 (3600)	LED
P32	SA4814 (3600)	Connector
P34	SA4816 (3600)	Connector
P35, P36	SA4817 (3600)	Connector
R1, R2, R6 through R8, R13 through R33	SA4778 (3600)	Resistor
R3 through R5, R9 through R12	SA4738 (3600)	Zero ohm resistor
RP1 through RP4	SA4790 (3600)	Resistor
U1 through U4	SA4818 (3600)	Integrated circuit

NOTE:
To ensure equal quality in your P.C. board replacement, components should always be of the same manufacturer and part number as originally installed on the board.

Circuit Board Assembly—LH Siderail Controls—P/N 4084001

Figure 5-20. Circuit Board Assembly—LH Siderail Controls—P/N 408401

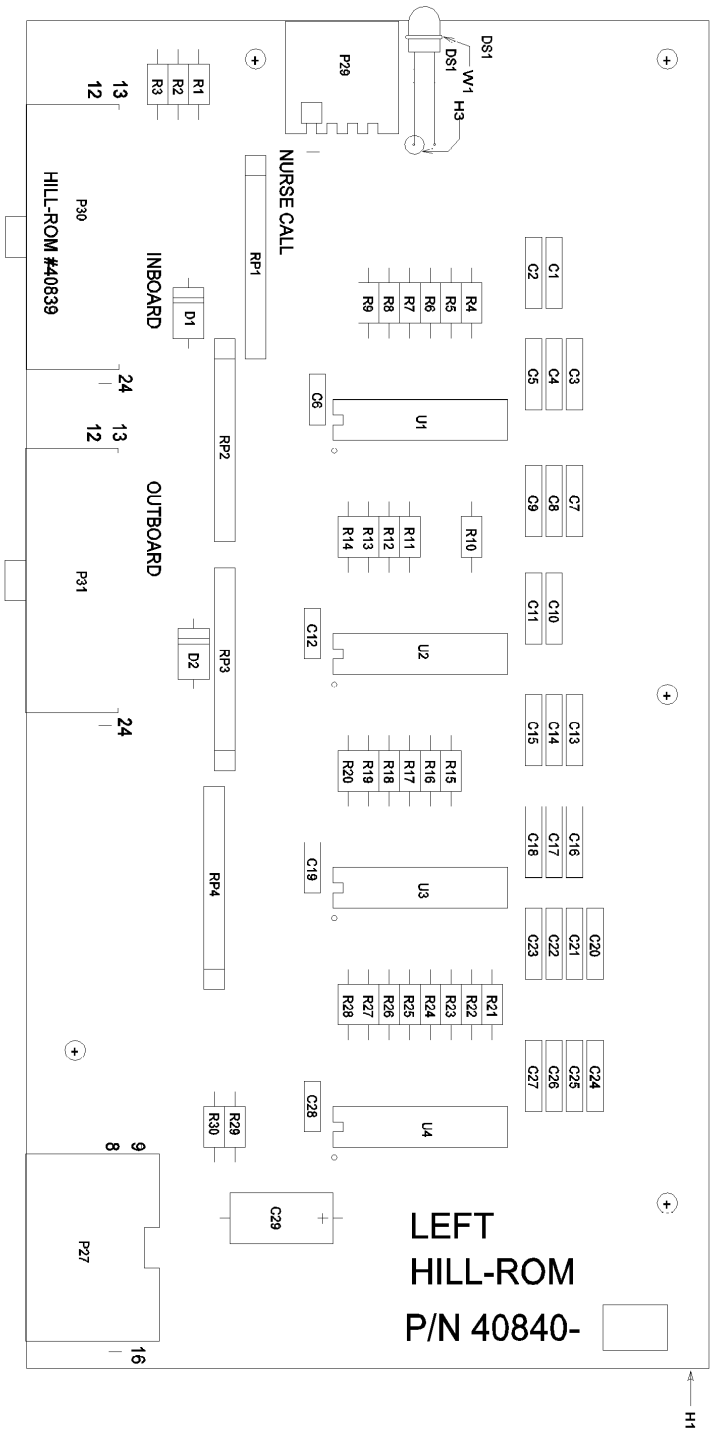

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Table 5-37. Circuit Board Assembly—LH Siderail Controls—P/N 4084001

Component Symbol	Part Number	Description
C1 through C5, C7 through C11, C13 through C18, C20 through C27	SA4752 (3600)	Capacitor
C6, C12, C19, C28	SA4714 (3600)	Capacitor
C29	SA4813 (3600)	Capacitor
D1, D2	SA4755 (3600)	Diode
DS1	SA4815 (3600)	LED
P27	SA4814 (3600)	Connector
P29	SA4816 (3600)	Connector
P30, P31	SA4817 (3600)	Connector
R1 through R3, R5	SA4738 (3600)	Zero ohm resistor
R4, R6 through R30	SA4778 (3600)	Resistor
RP1 through RP4	SA4790 (3600)	Resistor
U1 through U4	SA4818 (3600)	Integrated circuit

NOTE:
To ensure equal quality in your P.C. board replacement, components should always be of the same manufacturer and part number as originally installed on the board.

Circuit Board Assembly—SideCom W/Relays—P/N 40831-01

Figure 5-21. Circuit Board Assembly—SideCom W/Relays—P/N 40831-01

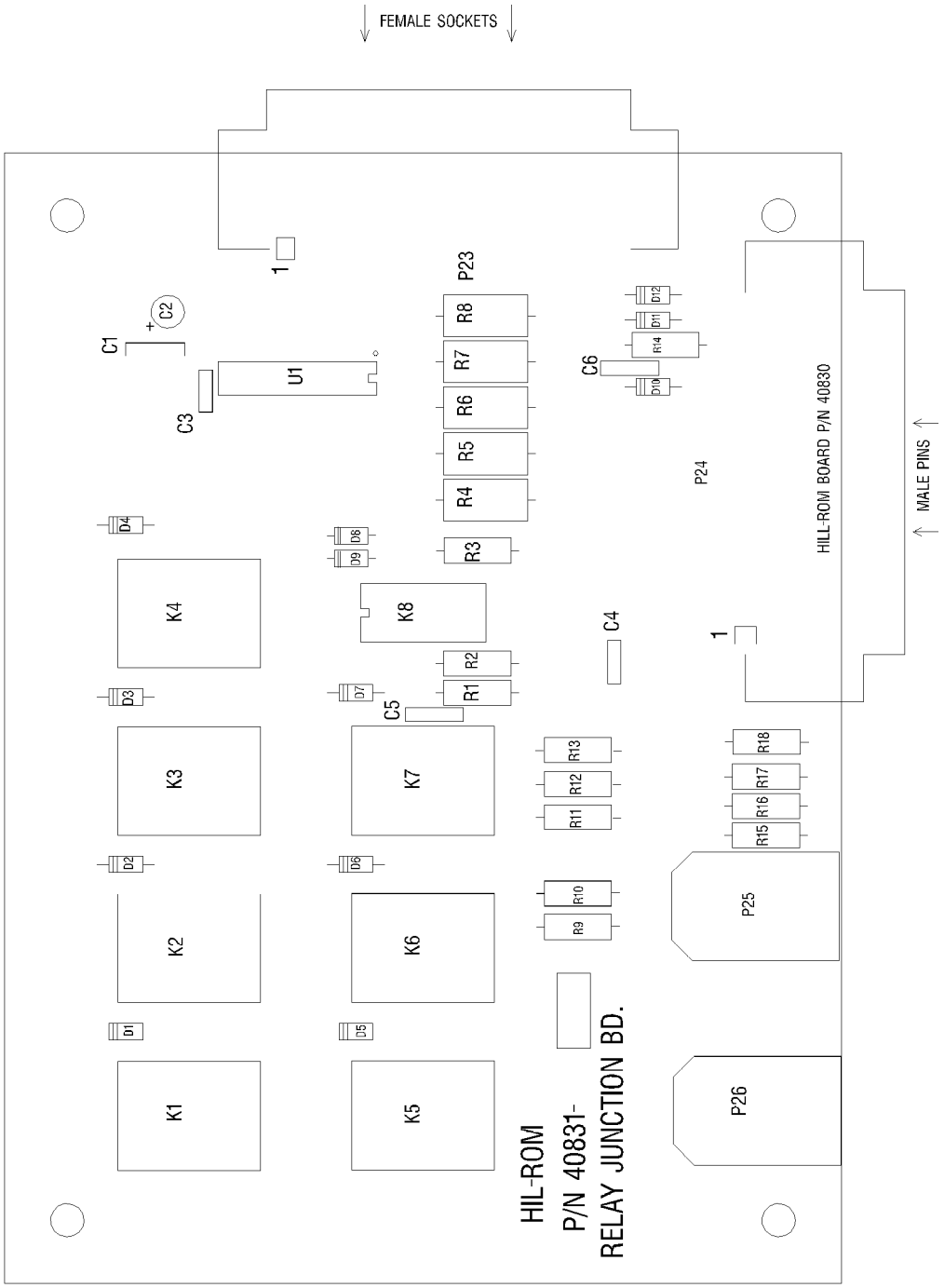

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Table 5-38. Circuit Board Assembly—SideCom W/Relays—P/N 40831-01

Component Symbol	Part Number	Description
C1	SA4749 (3600)	Capacitor
C2	SA4716 (3600)	Capacitor
C3	SA4714 (3600)	Capacitor
D1 through D12	SA4819 (3600)	Diode
K1 through K7	46990 (3600)	Relay
P23	SA4820 (3600)	Connector
P24	38345 (3600)	Plug—37
P25, P26	SA4822 (3600)	Connector
R1 through R3, R9 through R18	SA4738 (3600)	Zero ohm resistor
R4, R5, R7, R8	SA4824 (3600)	Resistor
R6	SA4825 (3600)	Resistor
U1	30414-2803A (3600)	Integrated circuit

NOTE:
To ensure equal quality in your P.C. board replacement, components should always be of the same manufacturer and part number as originally installed on the board.

Control Board—Mattress Drive—P/N 41188

Figure 5-22. Control Board—Mattress Drive—P/N 41188

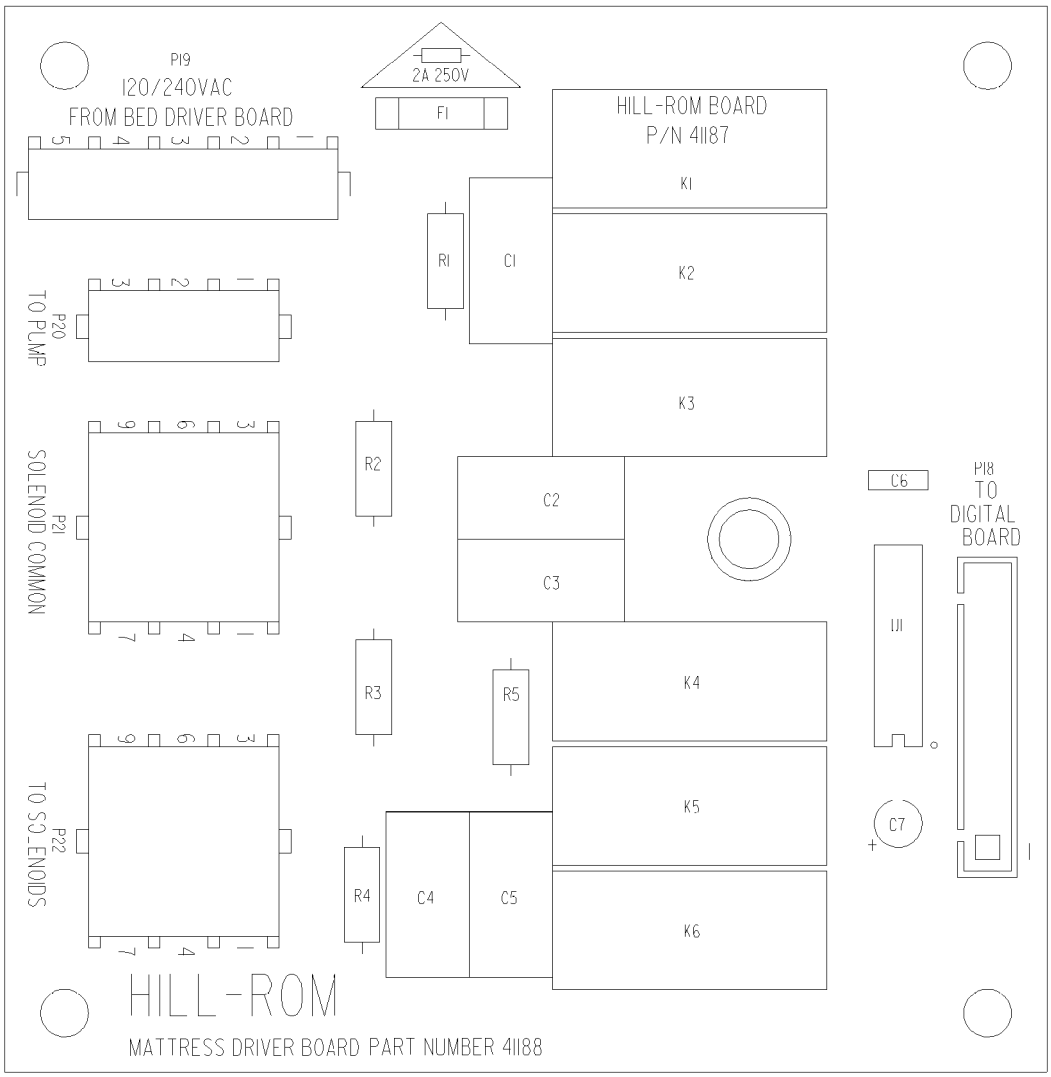

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Table 5-39. Control Board—Mattress Drive—P/N 41188

Component Symbol	Part Number	Description
C6	SA4714 (3600)	Capacitor
C7	SA4807 (3600)	Capacitor
H2	SA4697 (3600)	Eyelet
K1 through K6	30702 (3600)	Relay
P18	SA4758 (3600)	Connector
P19	SA4808 (3600)	Connector
P20	SA4809 (3600)	Connector
P21	SA4810 (3600)	Connector
P22	SA4811 (3600)	Connector
R1 through R5	SA4739 (3600)	Resistor
U1	SA4812 (3600)	Integrated circuit
F1	SA8578 (3600)	Affinity II in-service tape

NOTE:
To ensure equal quality in your P.C. board replacement, components should always be of the same manufacturer and part number as originally installed on the board.

NOTES:

Chapter 6
General Procedures

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Bed Service

WARNING:
Powered bed mechanisms can cause serious injury. Operate the bed only with persons clear of mechanisms.

WARNING:
Unplug the bed from its power source. Refer to the *Affinity Bed In-Service Manual* and specific sections in this service manual for additional precautions.

WARNING:
Ensure all electrical/mechanical loads are removed prior to maintenance/repair of the bed's drive system or other mechanical assemblies.

When you work with the bed in the high position, set the brakes, and place 2 x 4's between the base frame and lift arms. This will help prevent injury in case someone accidentally actuates the bed down switch.

If service on the bed requires it to be placed on its side, be sure to store and pad the siderails to prevent damage. Also, remove the brake/steer pedal to prevent damage.

WARNING:
When using the manual crank during power failure, unplug the bed from its power source so that unexpected resumption of power will not rotate the handle.

Cleaning and Care

WARNING:
Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

WARNING:
Follow the product manufacturer's instructions. Failure to do so could result in personal injury or equipment damage.

SHOCK HAZARD:
Do not expose the unit to excessive moisture. Personal injury or equipment damage could occur.

CAUTION:
Do not use harsh cleaners, solvents, or detergents. Equipment damage could occur.

Wood Component Care

Wood is selected for use on beds because of its beauty and warmth. All Hill-Rom wood products are treated with a resin based sealer and finish that provide resistance to abrasion, staining, and fluids. Many disinfectant cleaners have a softening effect on any painted or finished surface if used in high concentrations. Diluted ammonia, detergent, and bleach solutions may be used.

The Centers for Disease Control recommend EPA approved hospital disinfectants, used at the manufacturer's suggested dilutions, or bleach at a 1:100 dilution (1/4 cup to 1 gallon water), to clean environmental surfaces such as the Affinity bed and perinatal furniture.

Cleaning should be done by wiping a soft dampened cloth over the surface, followed by wiping with a dry cloth. At no time should a wet cloth be allowed to lay on the surface. Any liquid spilled on the surface should be wiped up immediately. Any liquid allowed to lie on the surface unattended may damage the finish.

For protection of the finish, we recommend using a liquid type furniture polish. Polish about once a month and wipe off any excess with a soft dry cloth. Have any nicks or scrapes repaired to prevent water damage.

General Cleaning

Clean the unit with a lightly dampened cloth and ordinary disinfectants. Do not use excessive liquid.

Steam Cleaning

Do not use any steam cleaning device on the Affinity bed. Excessive moisture can damage mechanisms in this bed. Clean the bed with a lightly dampened cloth and ordinary disinfectants.

Hard to Clean Spots

To remove difficult spots or stains, use standard household cleaners and a soft bristle brush. To loosen heavy dried-on soil or excreta, you may first need to saturate the spot.

Disinfection

Dilute disinfectants and germicides as specified on the manufacturer's label.

NOTE:
Use only those solutions recommended by the manufacturer.

Mattress Draping

Correct draping techniques are essential in helping to preserve the life of the mattress. Drapes must be fluid repellent. The full-size B7831 labor and delivery drape effectively covers the lower three-quarters of the bedding throughout labor. Additional pads or towels placed under the patient will keep fluid from reaching the edges of the drape. This keeps the sheets clean and dry while preventing fluid exposure to the mattress.

CAUTION:
Mattress damage caused by improper draping and/or cleaning procedures is not covered by warranty.

CAUTION:
Standard OB packs and paper drapes will not keep the sheets dry.

Repeated soaking and scrubbing of mattress materials will accelerate wear and eventually destroy mattress seals, causing fluids to leak into the cushions.

Lubrication Requirements

WARNING:
Follow the product manufacturer's instructions. Failure to do so could result in personal injury or equipment damage.

CAUTION:
Do not use silicone-based lubricants. Equipment damage could occur.

Hill-Rom uses maintenance-free DU bushings at major load and pivot points throughout the bed. These bushings are designed to run dry **without lubrication**. If the bushing squeaks during operation, anti-seize compound may be applied to its bearing surface.

CAUTION:
Inspect the bushings annually. If wear is apparent, replace them.

The following lubricants can be safely used on the bed:

- P/N SA4269 anti-seize lube (aerosol can—use on DU bushings)
- P/N 37929 anti-seize (brush top lid—use on DU bushings)

Oilite bearings and bushings are utilized in several places on the system. By retaining oil, the pores give a self-lubricating quality to the bearings and bushings. If any silicone-based lubricant is applied to the bearings and bushings or anywhere else on the system, this self-lubricating quality is neutralized.

It is safe to apply the following lubricants to the system:

- P/N 8252 M-1 penetrating oil (small bottle—apply to the oilite bushings and bearings)
- P/N SA3351 lithium grease (small tube)

Preventive Maintenance

WARNING:
Only facility-authorized maintenance personnel should perform preventive maintenance on the Affinity Bed. Preventive maintenance performed by unauthorized personnel could result in personal injury or equipment damage.

The Affinity Bed requires an effective maintenance program. We recommend that you perform semi-annual preventive maintenance (PM) and testing for Joint Commission on Accreditation of Healthcare Organizations (JCAHO). PM and testing not only meet JCAHO requirements but will ensure a long, operative life for the Affinity Bed. PM will minimize downtime due to excessive wear.

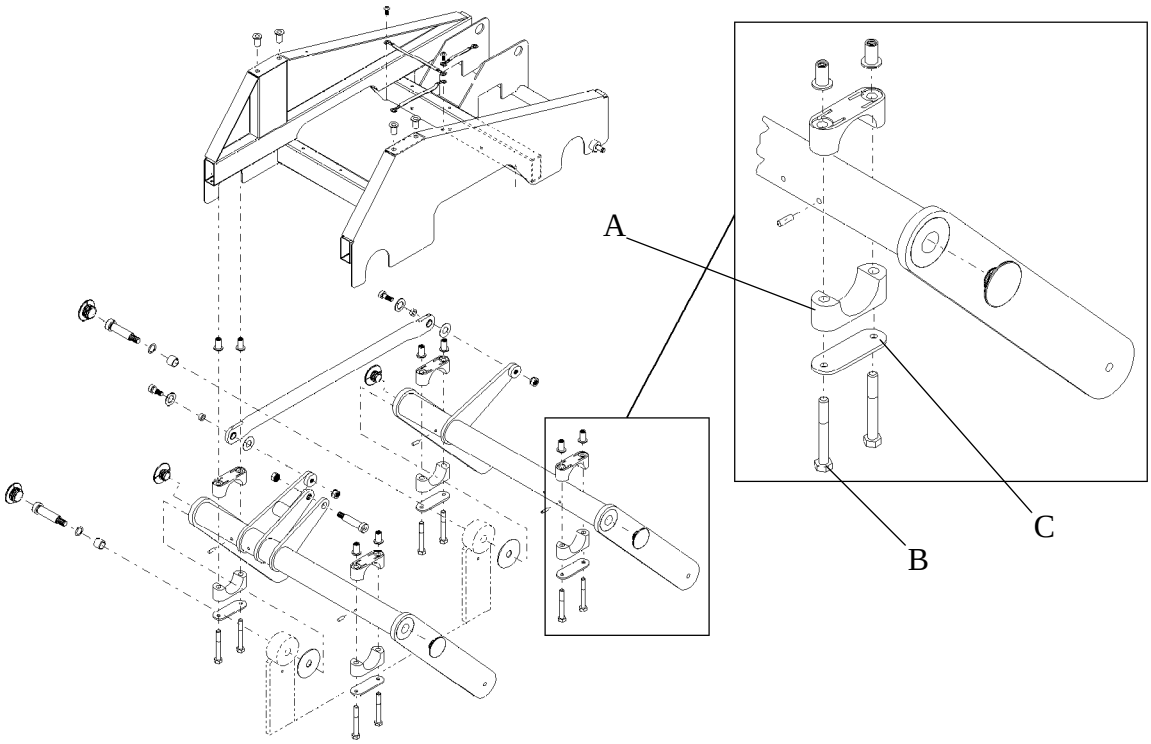
The following PM schedule guides the technician through a normal PM procedure on the Affinity Bed. During this PM process, check each item on the schedule, and make the necessary adjustments.

Follow the PM schedule with the corresponding PM checklist. This checklist is designed to keep a running maintenance history and subsequent repair costs for one Affinity Bed. However, your facility can modify this checklist or design another to fit your needs. Keeping close records and maintaining the Affinity Bed are two effective ways to reduce downtime and ensure the patient remains comfortable.

WARNING:
Inspect the pivot point fastener semi-annually. Failure to do so could result in personal injury or equipment damage.

Inspect the pivot point fasteners. If the pivot point fasteners (A) are finger-loose, or a gap is visible between the bolt head (B) and the pivot block plate (C), remove the bolt, apply Loctite®, install the bolt, and tighten to the original torque values (see figure 6-1 on page 6-8).

Figure 6-1. Pivot Point Location (Intermediate Frame)



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Hilow, Foot, and Head Drive Screw Inspection and Lubrication

Tools required: Standard screwdriver

The hilow, foot, and head drive screws require periodic inspection. However, under normal operating conditions, the drive screws will provide years of maintenance free operation. Perform the following to inspect the drive screws:

1. Set the brake/steer pedal to the brake position.
2. Raise the bed to the high position using the hilow function.
3. Raise the head section to the high position using the head function.

SHOCK HAZARD:
Unplug the unit from its power source. Failure to do so could result in personal injury or equipment damage.

4. Unplug the bed from its power source.

5. Using a phillips head screwdriver, remove the screws securing the top motor cover.

6. Remove the top motor cover from the bed.

7. Remove the bottom motor cover.

8. Perform steps 8 through 10 in the section “Hilow Motor or System Drive Screw Assembly” on page 4-7.

WARNING:
You must use the 2 x 4s to support the bed. The bed will fall during this procedure if not supported. Failure to do so could result in personal injury or equipment damage.

CAUTION:
Ensure the night light is not being damaged when the bed is being lowered.

9. To obtain the greatest amount of access to the drives without removing them, perform the following:
   a. For the hilow drive screw, lower the bed to expose the screw threads and work from beneath the bed.
   b. For the foot drive screw, raise the foot section to its highest position and work from beneath the bed.
   c. For the head drive screw, raise the head section and work from the top.

10. Using adequate lighting, properly lubricate the drive screw.

11. The drive screw will glisten with a very light film of lithium grease.

NOTE:
Ensure that excess grease is not present anywhere on the drive screw, including the ends of the drive screw.

12. Wipe away any build-up of excess lubrication, dust, and dirt from the exposed surfaces of the drive screw.

13. Refer to the respective drive screw servicing procedures if additional servicing of the drive screw is needed.

NOTE:
Excess lubrication on the drive screw may cause the bed to drift or coast down.

14. If necessary, apply a 1/8" x 1" bead of lithium grease to the head and hilow drive screw, or 1/8" x 3" for the foot drive screw, and cycle the bed function (up/down) to spread the grease.

15. Reinstall the top and bottom motor covers.

Foot Support Inspection and Lubrication

Tools required: Tape measure

The foot support assembly requires periodic inspection and lubrication. Perform the following to inspect the foot support assembly:

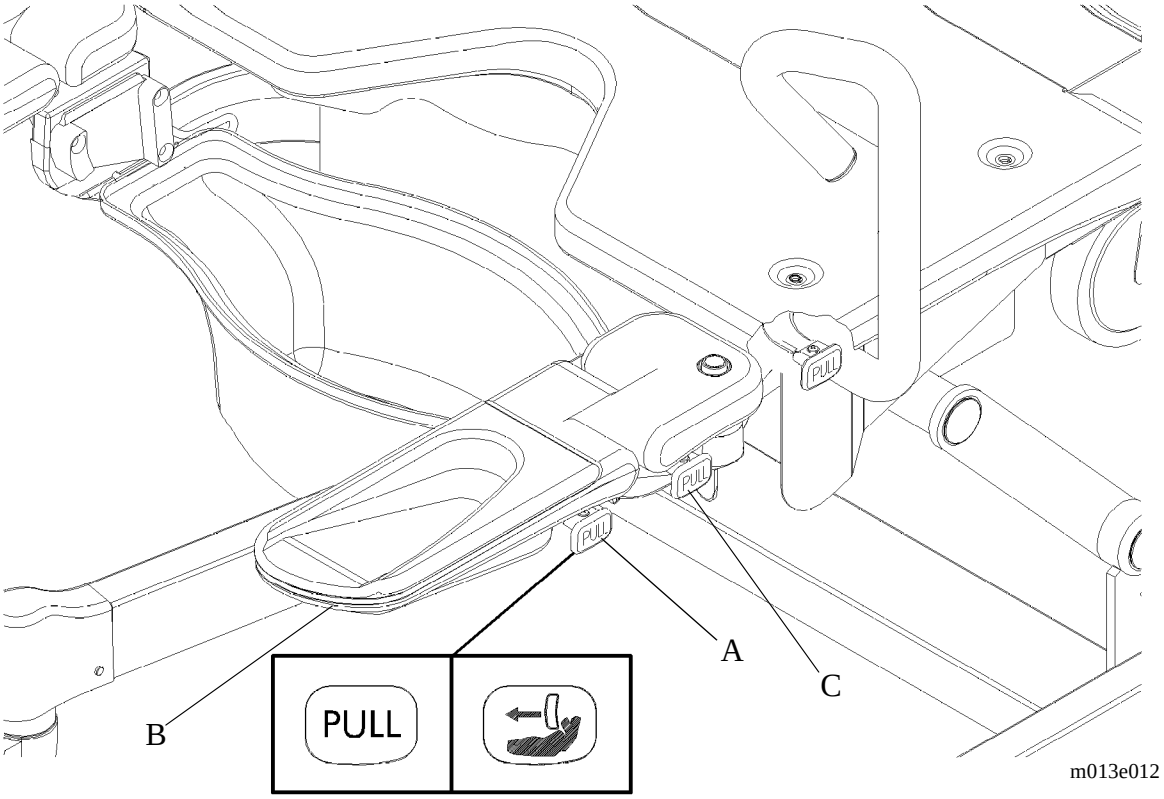
1. Rotate the foot support upward.

2. Ensure the foot supports latch in each ratchet notch.

3. To ensure proper latching, deliver a solid, downward impact at two to three places on the foot support.

4. Pull the release latch (A) to release the foot support (B) (see figure 6-2 on page 6-11).

Figure 6-2. Foot Support Assembly



5. Ensure the release latch (A) operates smoothly and should re-engage the foot support (B) when released at anytime during the downward movement.

6. Pull the release latch (C) to swing the foot support (B) outward.

7. To ensure proper engagement of the release latch (C), release the latch two to three times during the outward motion.

8. Return the foot support to its original position.

9. Remove the foot support from the foot yoke/key. The removal should be smooth and done easily.

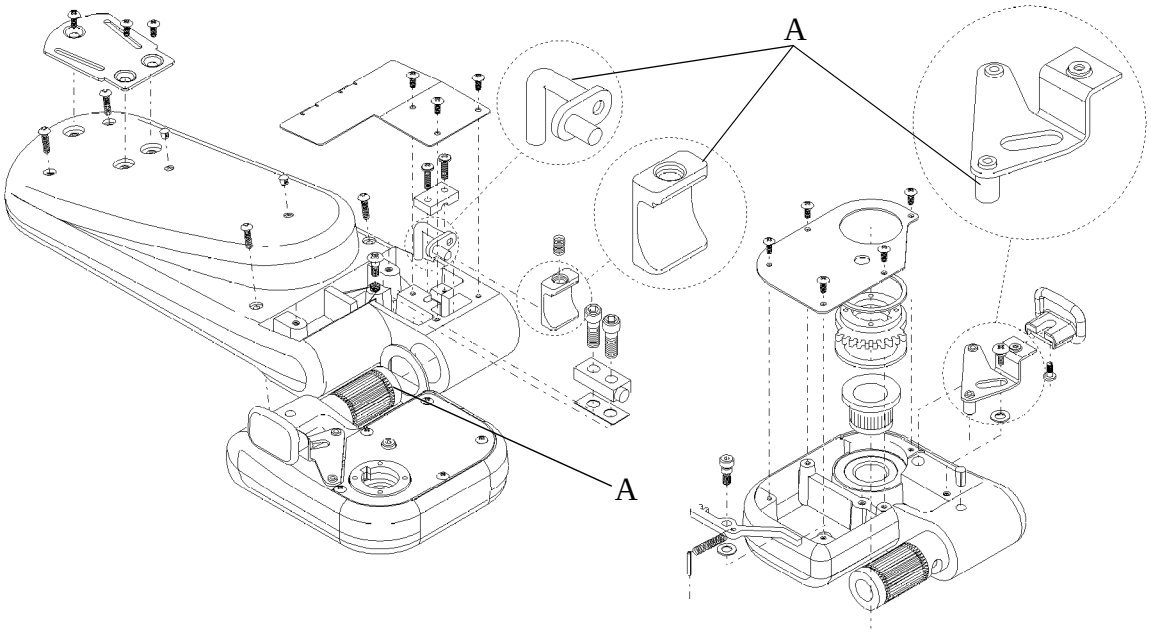
10. Check the foot support for any missing, loose, misplaced and wrong parts.

11. Check the finish on the surfaces of the foot support.

12. Ensure the plastic foot pad sits flush and centered with the foot rest casting, and no gaps should be evident.

13. Ensure anti-seize is applied to all applicable anti-seize points (A) on the foot support assembly (B) (see figure 6-3 on page 6-12).

Figure 6-3. Anti-Seize Lubrication Points



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14. Ensure all foot support functions work properly after the completion of the inspection and lubrication.

Hilow Optical, Foot Optical, and Trendelenburg Limit Switch Inspection

Tools required: Tape measure

NOTE:
The procedures described in this section require that you perform only one limit switch measurement for each of the hilow and foot optical packages to determine if the respective optical packages are adjusted correctly. These procedures also enable you to decide if all of the limits within the optical package and their associated circuits are functioning properly.

1. Set the brake/steer pedal to the brake position.

2. Ensure the bed is out of the Trendelenburg position.

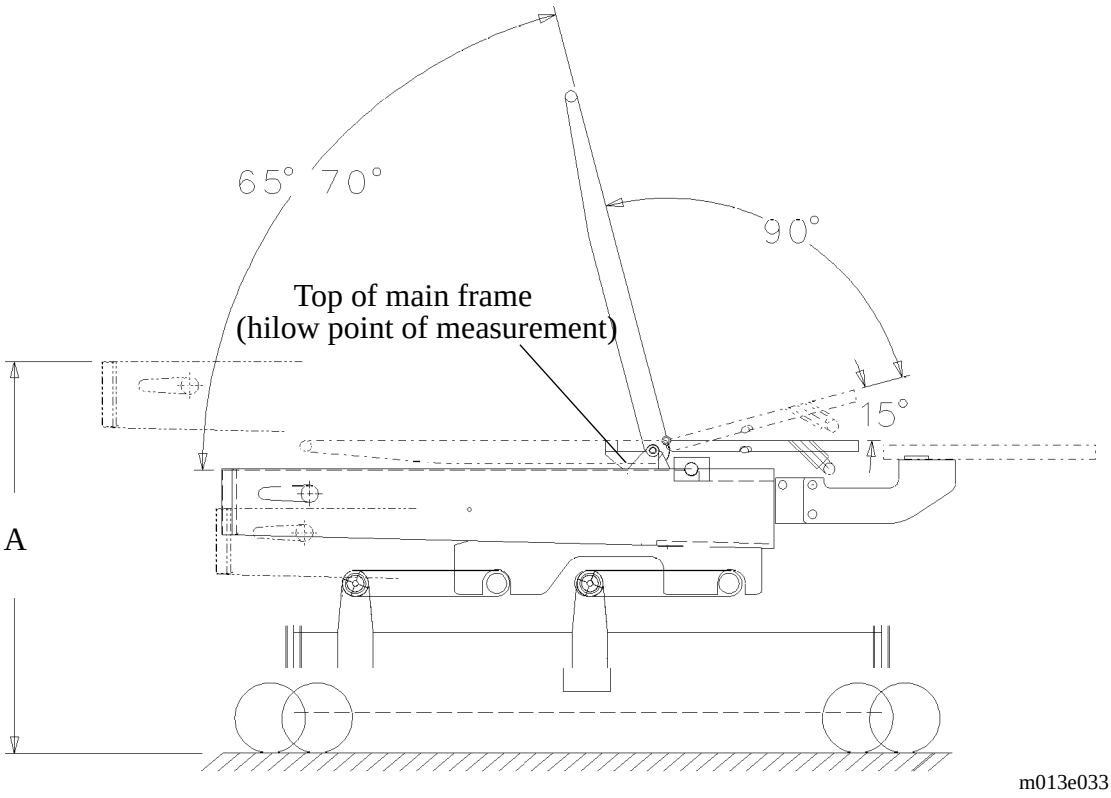
3. Remove the head and foot mattresses from the bed.

4. Lower the head section to the low position using the head function.

5. Raise the bed to the high position using the hilow function (LBU-Limit Bed Up).

6. Measure from the top center point of the main frame (near the head section pivot point) to the floor. Distance (A) should be 32.625-33 inches (see figure 6-4 on page 6-13).

Figure 6-4. Hilow Optical, Foot Optical, and Trendelenburg Limit Switch



NOTE:
Refer to the section “Hilow Limit Switch” on page 4-29 for instructions (if necessary) on adjusting the hilow limit switch.

7. Raise the foot section to the high position using the foot function.

8. Observe that the foot section stops at approximately 2 inches above the head/seat (flat position—”A”, “B”, and “C” versions) sleep surface (LFU-Limit Foot Up).

9. Lower the foot section from its highest position using the foot function.

NOTE:
Steps 10 through 12 apply to beds with foot pause only.

10. Observe that the foot section pauses for one second at a position level with the seat sleep surface (LFL-Limit Foot Level).

11. Determine the foot section level position by laying a straight edge across the middle of the foot and seat sleep surfaces.

12. The allowable maximum deviation is +/- 0.25 inch. Refer to the section "Foot Limit Switch" on page 4-33 for procedures (if necessary) on adjusting the foot limit switch.

13. Position the foot section to the level position using the foot function.

14. Lower the bed to the low position using the hilow function (LBD1-Limit Bed Down 1).

15. Lower the foot section and observe a 0.5 second delay (LFD2-Limit Foot Down 2).

16. Continue activating the foot down switch and observe that the hilow up function operates and stops (LBD2-Limit Bed Down 2).

17. Raise the foot section to the level position using the foot function.

18. Lower the bed to the low position using the hilow function.

19. Activate the right side Trendelenburg handle.

20. Ensure that the hilow motor *up* function is activated (TH-Trendelenburg Handle Switch).

21. Observe that the bed runs up and stops (TLBD1-Trendelenburg Limit Bed Down 1).

22. With the bed in the full Trendelenburg position, raise the bed into a mid-height or higher position.

23. Lower the bed to the low position using the hilow function.

24. Observe that the bed stops without causing the head end casters to lift off of the ground (TLBD2-Trendelenburg Limit Bed Down 2).

25. The Trendelenburg sensing/spring switch (TS) enables the bed to stop at the TLBD2 position. Refer to the section "Trendelenburg Spring and

Sensing Switch” on page 4-44 (if necessary) for procedures on adjusting the Trendelenburg sensing/spring switch (TS).

Preventive Maintenance Schedule

Table 6-1. Preventive Maintenance Schedule

Function	Procedure
Head limits	With bed out of the Trendelenburg position, run the head section to the full upper limit (65 - 70 degree angle) to verify that the head upper limit switch is functioning correctly. Run the head section to the lower limit to ensure proper function of the head "flat" limit switch. The head section should stop when its bumpers touch the top motor cover. See "Head Limit Switches" on page 4-40 for adjustment procedures.
Hilow, foot and Trendelenburg limits	Verify proper adjustment of these limit switch packages by operating each system function and observing the action of each. Compare the operation with the procedures described under section "Hilow Optical, Foot Optical, and Trendelenburg Limit Switch Inspection" on page 6-12. See "Hilow Limit Switch" on page 4-29 or "Foot Limit Switch" on page 4-33 or "Trendelenburg Spring and Sensing Switch" on page 4-44 for the respective switch (hilow limit switch, foot limit switch, and Trendelenburg limit switch) to adjust if necessary.
Head drive screw	Inspect the head drive screw for proper lubrication. See "Hilow, Foot, and Head Drive Screw Inspection and Lubrication" on page 6-8 for lubrication procedures.
Foot drive screw	Inspect the foot drive screw for proper lubrication. See "Hilow, Foot, and Head Drive Screw Inspection and Lubrication" on page 6-8 for lubrication procedures.
Hilow drive screw	Inspect the hilow drive for noise, coasting and drifting. See "Motor Maintenance" on page 6-22. Inspect the hilow drive screw for proper lubrication. See "Hilow, Foot, and Head Drive Screw Inspection and Lubrication" on page 6-8.
Caster tires and central brake and steer	Check the tires for cuts, wear, tread life, etc. Apply the brake and check to ensure that the bed will not move (when the brake is activated). If the bed moves, inspect it for wear and adjust if required. See "Caster Assembly" on page 4-99. Apply the steering pedal and check the steering to ensure proper locking action when activated. See "Caster Assembly" on page 4-99

Function	Procedure
Siderail controls	Check the switches in the siderails to ensure they are functioning correctly. Also check for intermittent operation at this time. See "Siderail Attendant (Outboard) and Patient (Inboard) Switch Assembly" on page 4-80 for appropriate module replacement instructions if necessary.
Siderail frame	Check the siderail frame to ensure proper latching and down storage. Repair as necessary (see "Siderail Assembly" on page 4-90).
Pendant control	Check the pendant control for proper operation. Visually inspect the cord to ensure no cuts, nicks, or breaks exist. Replace if necessary.
Pivot points and torque values	Inspect the shoulder bolts through the pivot blocks on the frame (see figure 6-1 on page 6-8). Apply Loctite®, and tighten to the torque specifications. See "Torque Specifications" on page 6-21 Inspect pivot points for wear and lubricate if noisy.
Power cord and plug	Inspect the power cord and plug for cuts, nicks, or breaks.
Motor capacitors	Check the capacitors to ensure that they are not weak or defective. See "Capacitor Verification (Checking For Weak Capacitor)" on page 6-22.
Lockout switches	Test each switch separately for proper function.
Communications	Test all Sidecom features (radio, TV, light, entertainment, and nurse call functions) for proper operation. Inspect the communication cable. Inspect the cord for cuts, nicks, or breaks. Inspect the male pins and female receptacle in the connecting plug.
Electrical test	Test the bed for electrical leakage. Ground resistance must be less than 0.20 ohms. Leakage current must be **less than** 45 micro amps for 120 volt models, and **less than** 75 micro amps for 230 volt models. Assign the safety sticker.
Night light	Check the night light for proper functioning. The sensor for this light is very sensitive to ambient light and will not turn on unless placed in complete darkness. To test, cover the sensor **completely** with a folded dark cloth.
Foot section	Inspect for proper slide engagement of the foot section to the foot yoke casting assembly.

Function	Procedure
Air system	Test the air system functions (air bladders) for proper inflation and deflation. Also inspect the mattress for punctures, cuts or tears. Check the air compressor assembly, hose connections, and "O" rings for signs of leakage.
Electrical compartment covers	Inspect the covers for signs of fluid leakage into the electrical compartment.
Foot supports	Check the latch/release mechanism for proper operation. Verify positioning to ensure there is no binding. Ensure the foot support rotates and locks every 10 degrees (up to a 90 degree position). Inspect the foot supports for proper lubrication (see “Foot Support Inspection and Lubrication” on page 6-10). Repair or replace as required.
Calf supports	Check the latch/release mechanism for proper operation. Verify free rotation to ensure there is no binding. When the grip is rotated to the right (clockwise), the ball joint should tighten; when rotated to the left (counterclockwise), the ball joint should loosen. Repair or replace as required.
Labor grips	Check that the labor grips latch properly and are functional.
CPR	Test the CPR release for proper operation and reset of the head drive system. When the CPR release is pulled, the bed should lower from any position into a flat position within 7 seconds with 75 lbs. of minimum weight on the head section.
Head panel	Check the head panel appearance and functionality.
Overall appearance	Touch up paint where necessary. Inspect the labels and replace if necessary. Check the general aesthetics of the bed Observe the symmetry of the bed by viewing it from each corner while looking toward the opposite corner (i.e.: view from left side, foot end looking toward right side head end). Ensure that the foot and head (etc.) are not bent from alignment.

Preventive Maintenance Checklist

Table 6-2. Preventive Maintenance Checklist

Date																						
																						Function
Hill-Rom Company, Inc.	Manufacturer																					Head limit switches
																						Hilow limit switches
																						Foot limit switches
																						Trendelenburg limit switches
																						Head drive screw
																						Foot drive screw
																						Hilow drive screw
	Model Number																					Caster tires
																						Central brake and steer
																						Siderail controls
																						Siderail frame
																						Pendant control
																						Pivot points and torque values
																						Power cord and plug
	Serial Number																					Motor capacitors
																						Lockout switches
																						Communications
																						Electrical test
																						Night light
																						Foot section
																						Air system
Total Cost for This Page																						Labor Time:
																						Repair Cost:
																						Inspected By:
																						Legend L=Lube C=Clean A=Adjust R=Repair or Replace O=Okay

6

Date																						
																						Function
Hill-Rom Company, Inc.	Manufacturer																					Electrical compartment covers
																						Foot and calf supports
																						Labor grips
																						CPR
																						Head panel
																						Overall appearance
	Model Number																					
	Serial Number																					
Total Cost for This Page																						Labor Time:
																						Repair Cost:
																						Inspected By:
																						Legend L=Lube C=Clean A=Adjust R=Repair or Replace O=Okay

Torque Specifications

Specific fasteners on the Affinity bed require proper tightening during assembly or replacement. Depending on where a fastener is used, it may require a different torque due to its application. These fasteners are identified in the graphic illustration(s) and/or in the instructions under section “Removal, Replacement, and Adjustment Procedures” on page 4-1

Motor Maintenance

NOTE:
If the bed function motor is suspected to be faulty, replace the capacitor. Re-check the operating function before concluding that the motor needs to be replaced (see table 6-3 on page 6-22).

Table 6-3. Motor Maintenance

Problem	Possible Cause	Test Procedure
Noisy motor	The motor or the shaft is damaged.	Operate the motor driven function and visually observe for evidence of physical damage to the drive system (i.e. check for bent motor shaft, loose metal, etc.).
	The motor drive mount bolts are loose.	Inspect the motor drive mounting and tighten as necessary.
	Internal motor problem, weak capacitor, or debris residue on shaft.	Test the operation under a load condition. Replace as required. Be sure to degrease the shaft and lubricate.
Coasting or drifting	The wrong type of lubricant is on shaft, or grease is on the brake washer.	Check for use of silicone lubrication, Teflon lubricant, etc. on brake washer; also check for buildup on shaft. Refer to the respective drive maintenance heading.
	Failed capacitor	Inspect, test capacitor and replace as required.

Capacitor Verification (Checking For Weak Capacitor)

Usually, motor capacitors become weak before failure. An easy check for a weak capacitor in the system is as follows:

Operate the motor in either direction. Then, quickly reverse its operation while observing its travel characteristics. If there is an unusual delay before the motor reverses, or if the motor doesn't reverse (but continues in the original direction), the system capacitor is indicated as weak, or faulty, and must be replaced.

Tool and Supply Requirements

Certain tools are required for performing recommended service procedures. These tools are in addition to the commonly stocked hand tools that are normally found in a qualified, trained service technician's tool box.

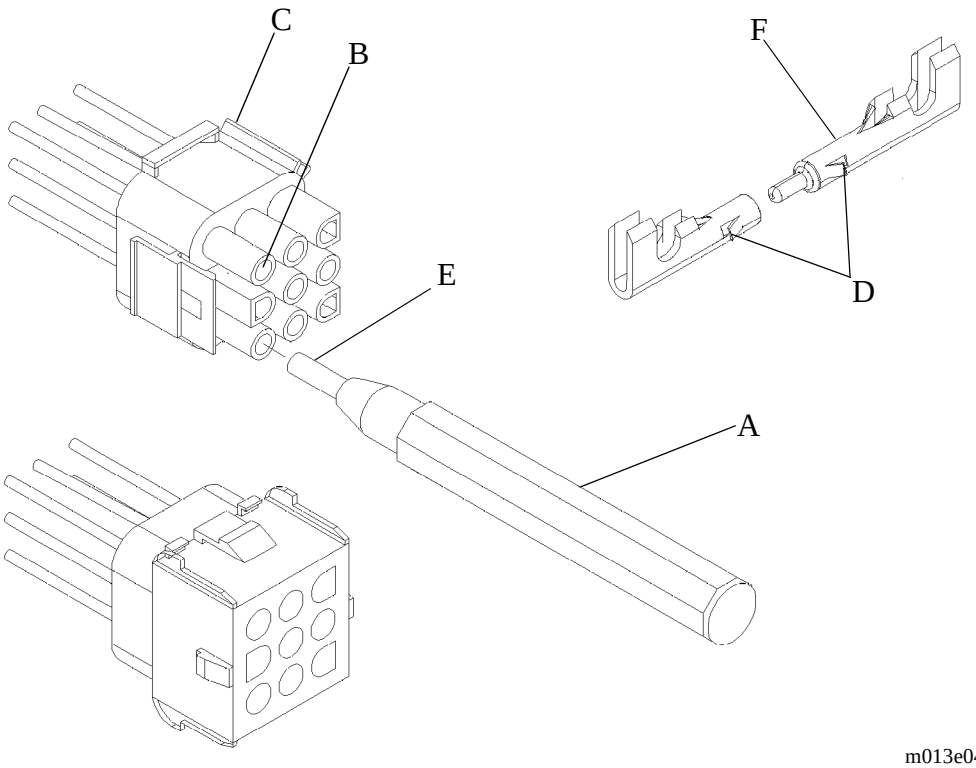
Terminal Extraction Tools

Table 6-4. Terminal Extraction Tools

Part Number	Quantity	Description
429022 (3600)	1	Pin extractor
SA3658 (3600)	1	Pin extractor
SA4299 (3600)	1	Air system valve removal tool (original style bed)

The extraction tool (A) is Hill-Rom part number 429022 (see figure 6-5 on page 6-23).

Figure 6-5. Extraction Tool—429022



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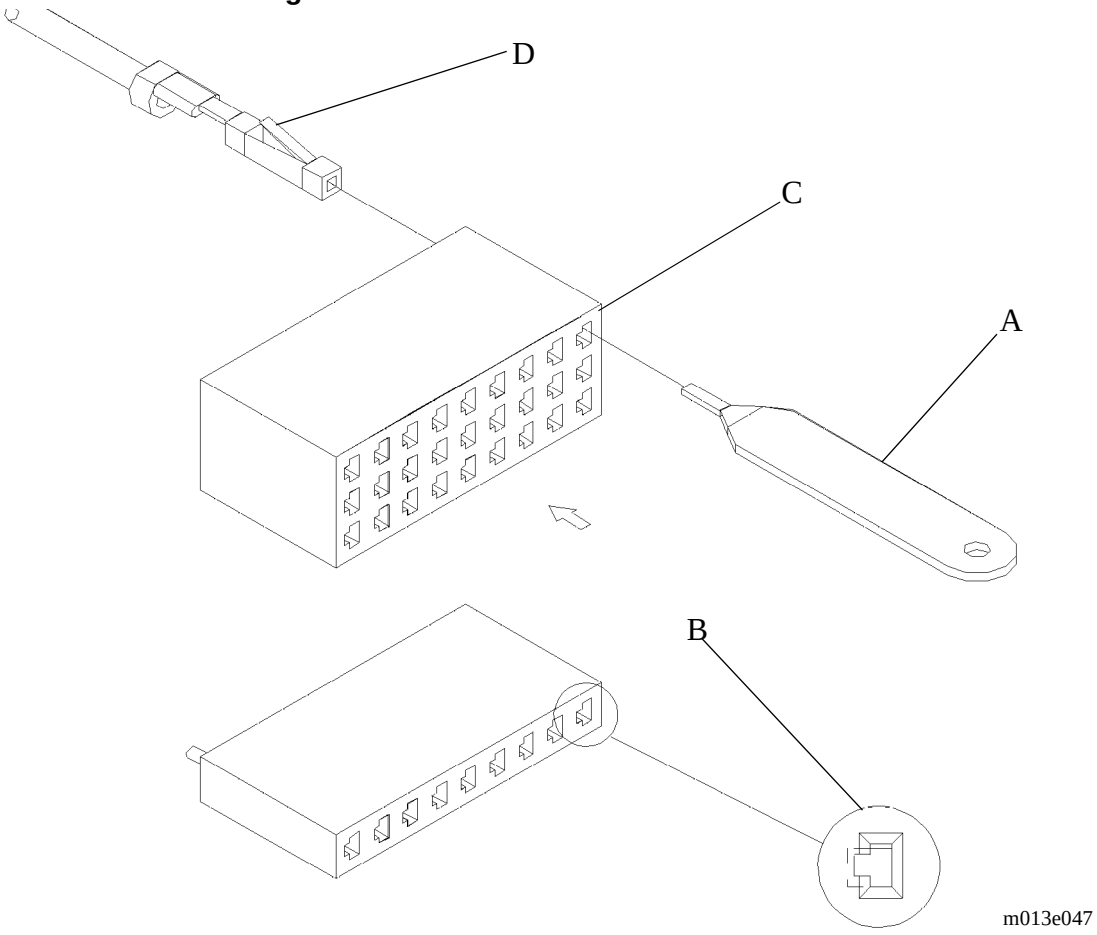
It is used to extract the terminals from the wiring connector to P14, P15, P16, P17, P19, P20, P21, and P22 on the printed circuit (P.C.) boards. This tool has a blue plastic handle and is for removing AMP Universal MATE-N-LOK pin and socket contacts from their housings. The tool is designed to enter the contact cavity (B) in **front of the connector** (C) and depress the locking lance (D) of the contact. The tip (E), located at the front of the tool, fits over the pin (F) and socket contacts. When the tip is bottomed in the contact cavity and the spring-loaded handle of the tool is depressed fully, the locking lances are forced together and allow the contact to slide free from the housing.

The extraction tool (A) is Hill-Rom part number SA3658 (see figure 6-6 on page 6-24).

Figure 6-6. Extraction Tool—SA3658



It is used to extract the terminals from the wiring connector types illustrated. This tool is designed to enter the contact cavity (B) in **front of the connector** (C) and depress the locking lance (D) of the contact, enabling it to slide free from the connector housing.

The following tools are required to service the Affinity Bed:

- 1" speed wrench
- 1/4" allen wrench *stubby-type* with a 3/8" drive (for ratchet handle)
- External split-type snap ring pliers
- Torque wrench - 0-315 in-lb.
- 1/4" allen wrench
- (2) spiral pin
- Punch (2)
- Roll pin
- Phillips head screwdriver
- Anti-seize compound
- Hammer
- Red Loctite #262
- 7/16" wrench
- Torque wrench
- 1" wrench
- 9/16" wrench
- Wire cutter
- 1/2" x 36" head section support rod
- Bed stands, or (2) pieces of 2" x 4"x 32" lumber
- Tape measure
- 5/16" wrench
- Protractor (magnetic type recommended)
- 3/8" wrench
- 1/2" wrench
- 11/16" wrench
- Split-ring removal tool
- External snap-ring removal tool
- Needle nose pliers
- Standard head screwdriver
- Pliers

- Valve removal tool
- Phillips head screwdriver (small)
- 1/8" drift punch
- E-ring removal tool
- Marker pen
- Standard head screwdriver (small)
- 5/32" allen wrench
- 3/32" allen wrench

Loctite Usage

The proper use of Loctite retaining compounds during service is essential to enable certain fasteners to be correctly retained. The information contained within this sub-heading explains the recommended procedures for those retaining compounds used during the reassembly instructions contained within this service manual.

The adhesive/sealant retaining compounds, referred to as Loctite, are anaerobic, single-component resins supplied as a liquid. These resins remain in a liquid state in the presence of air, but harden into insoluble plastic film solids when confined between clean, close-fitting metal surfaces. They can be used in conjunction with natural rubber, glass, ceramics, and thermosetting plastic surfaces (phenolic, polyester, etc.). Also, they will not usually harm nylon, polyethylene, or saran. However, in their liquid state, they sometimes soften or craze vinyl, cellulosic, styrene, methacrylate plastic (Plexiglas, etc.), and varnished finishes. Cured resins will not affect any of these materials. It is important to note that an opened bottle of these products has a definite shelf-life (usually about 6 months), which affects its serviceability.

The resins referred to within this manual will usually cure to their hardened state on metal parts without need of primers. However, the use of a recommended primer will help degrease the part and leave a light deposit of a catalyst to speed curing. The temperature of the parts also affects their cure time. At 40° F (4° C) it may take weeks to cure, but at 75° F (24° C) parts will cure within the time length indicated on the bottle.

WARNING:
Use primers with adequate ventilation. Avoid skin contact and prolonged or repeated breathing of vapors. Do not allow primers to be trapped under rings, watch bands, etc. Observe all directions on the primer can. Failure to do so could result in personal injury.

When using the product recommended during the service procedure:

1. Apply to clean surfaces only. If necessary, degrease the parts.

2. Use liquid sparingly (usually one or two drops on threaded fasteners). Be sure to apply when thread engagement begins. Disassemble the parts. Remove the old Loctite, and clean the parts. Reapply the new Loctite during reassembly.

3. Assemble the parts and allow them to cure. Observe the time stated on bottle label before placing back into service.

WARNING:
Avoid excessive or repeated skin contact with the liquid.

If difficulty is experienced in removal or disassembly of a part with Loctite #262 or #271 applied, heating the area (screw, bolt, nut, etc.) will aid in its removal.

Purple Loctite #222

Typical usage is as a low strength adhesive for screws. It is also suitable for sealing threads, fittings, and cylindrical parts. It normally cures in 2-6 hours at 75° F (24° C) and permits disassembly under condition of maximum thread engagement.

Blue Loctite #242

Typical usage is as a medium strength adhesive for nuts, screws, keys, and splines. It is not normally used on fasteners smaller than 1/4" (6.4 mm) with more than 1/2" (12.7 mm) engagement **if removal is desired**. It is also suitable for hydraulic, pneumatic, and pipe fittings. Normal cure is 2-6 hours at 75° F (24° C) and permits disassembly under condition of maximum thread engagement.

Red Loctite #262

Typical usage is as a medium to high strength adhesive for nuts, screws, etc. Normally it is not used on fasteners smaller than 1/4" (6.4 mm) with more than 1/2" (12.7 mm) engagement **if removal is desired**. Normal cure is 0.5-2 hours at 75° F (24° C) and permits disassembly under condition of maximum thread engagement.

Red Loctite #271

Typical usage is as a high strength adhesive for studs and screws. It is not normally used on fasteners smaller than 3/8" (9.5 mm) with more than 1/2" (12.7 mm) engagement **if removal is desired**. It is also suitable for hydraulic, pneumatic, and pipe fittings. Normal cure is 0.5-2 hours at 75° F (24° C) and **does not** permit easy disassembly.

Chapter 7
Accessories

Chapter Contents

Accessories . . . . . 7 - 3
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Installation . . . . . 7 - 5
Telescoping Calf Supports—P3574-5 / Telescoping Leg Supports—P7634 . . . . . 7 - 7
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Adjustment . . . . . 7 - 8

NOTES:

Accessories

See table 7-1 on page 7-3 for Affinity Bed accessories.

Table 7-1. Accessories List

Product Number	Description
P9950A-01/02	Foot section conversion kit
P2219A	Permanently attached IV/ISS rod
P3574	Calf supports
P35745	Detached telescoping calf supports
46226-C	U-cut head, seat air mattress
46226-E	Flame retardant u-cut head air mattress
P2221-01	Permanent IV rod
46225-C	V-cut head air mattress
4622502	Flame retardant v-cut head air mattress
46228-C	U-cut foam head, seat mattress
46228-E	Flame retardant u-cut head mattress
46227-C	V-cut foam head, seat mattress
46227-E	Flame retardant v-cut head mattress
46230-C	3" u-cut foot mattress
46230-E	Flame retardant u-cut foot mattress
46229-C	3" v-cut foot mattress
46229-E	Flame retardant v-cut foot mattress
P8620	Work stool
P7915	OB procedure light
P3623	Foley hook accessory kit
P3624	Siderail pad
P3608	Foot guard
P3609	Telescoping calf support
P495	Patient phone
P496	Patient phone adapter
P278	Instrument tray
P3610-CC	Standard v-cut foam mattress
P3610-EC	Flame retardant v-cut mattress

Product Number	Description
P3611-CC	Standard u-cut foam mattress
P3611-EC	Flame retardant u-cut mattress
P3612	Comfort pad
P3612-E	Flame retardant comfort pad
P3614-CC	Standard u-cut foam air mattress
P3614-EC	Flame retardant u-cut air mattress
P3615-CC	Standard v-cut foam air mattress
P3615-EC	Flame retardant v-cut air mattress
P3616	Calf supports - attached
P3617†	Headboard
P3618	Pendant control
P3619	Wedge mattress
P7625-C	Full leg supports
B7634	Telescoping full leg supports
P9620	Anesthesia arm board
P9625	Anesthesia screen
P7831	Labor/delivery disposable drape
SA1528	Bedding set - Affinity “V” bed
SA1529	Bedding set - Affinity “U” bed
SA4585	Affinity “V” 2 piece sheet set
SA4586	Affinity “U” cut 2 piece sheet set
P3627	Slip cover - u-cut
P3628	Slip cover - s-cut

† Specify wood finish.

7.1 Foot Section Conversion Kit—P9950A-01 (Lift Off) / P9950A-02 (Slide Off)

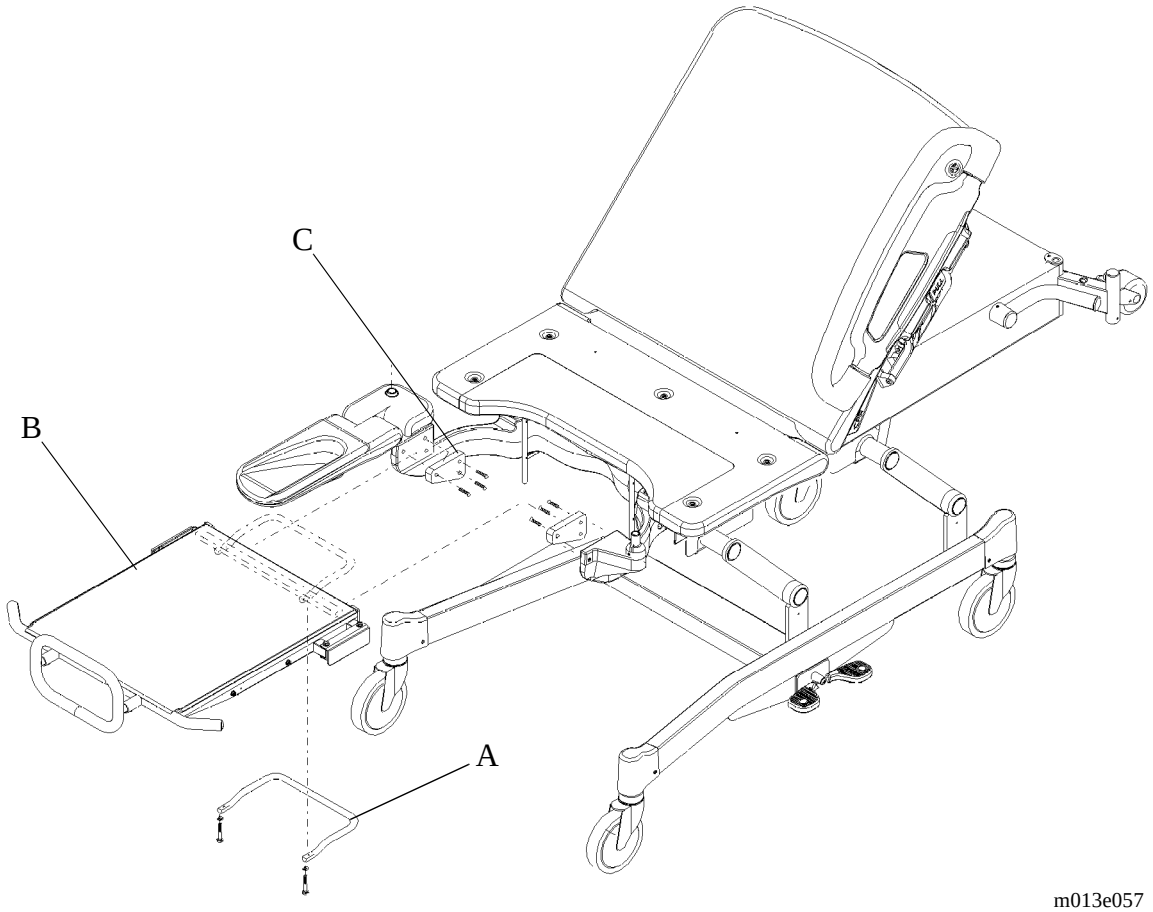
Tools required: 7/16" wrench
3/16" allen wrench

Installation

1. Remove the existing foot section from the bed.

2. Using a 7/16" wrench, remove the mattress support (A) from the existing foot section (see figure 7-1 on page 7-5).

Figure 7-1. Foot Section Conversion Kit—P9950A-01 (Lift Off) / P9950A-02 (Slide Off)



3. Using a 7/16" wrench, install the mattress support (A) on to the new foot section (B).

4. Using a 3/16" allen wrench, remove the old left and right mounting brackets from the bed.

NOTE:
Discard the old bolts and old mounting brackets.

5. Using a 3/16" allen wrench, install the new left and right mounting brackets (C) with the new bolts provided in the kit.

6. Install the new foot section (B) on to the bed.

7. Ensure the foot section works properly.

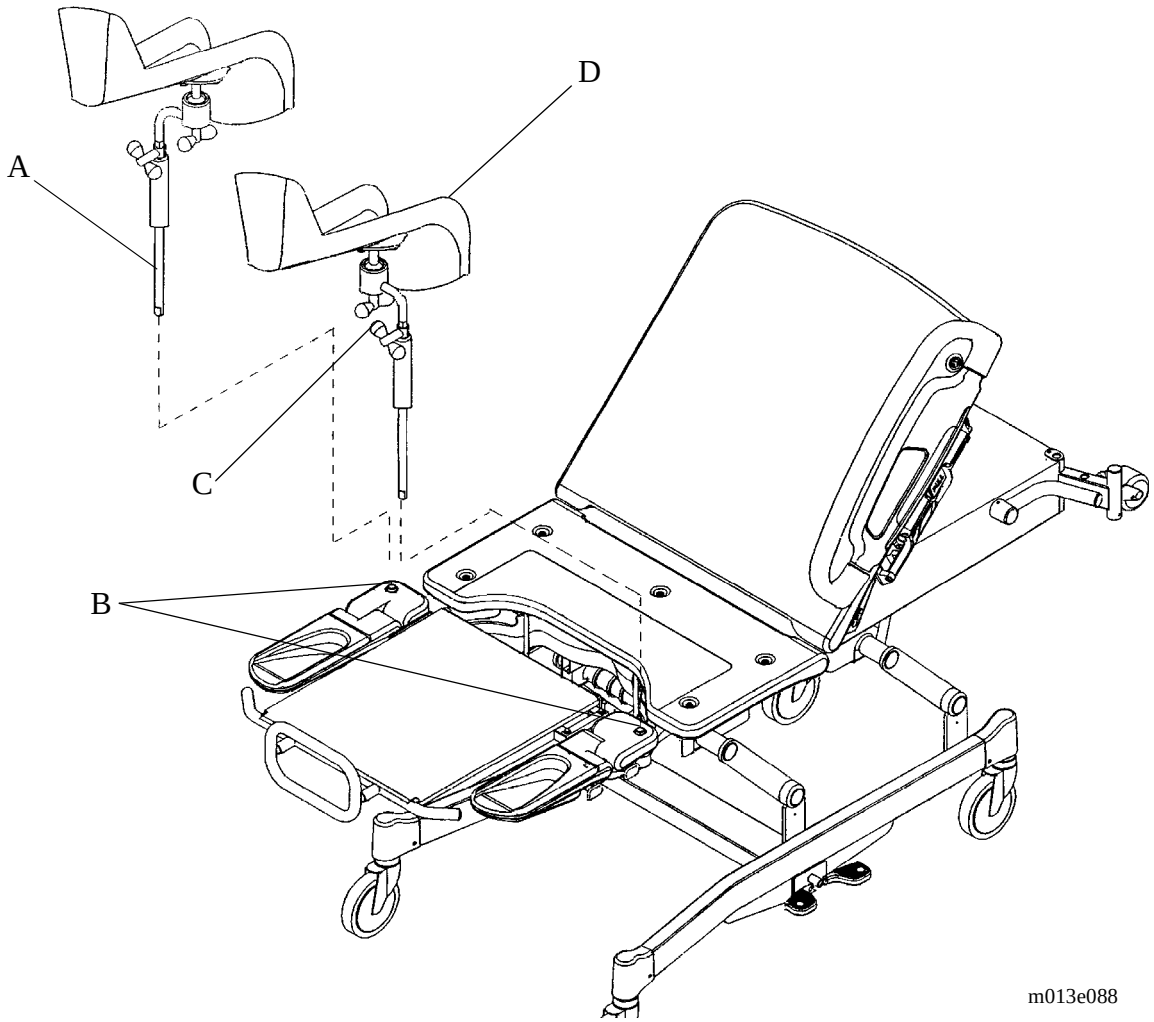
7.2 Telescoping Calf Supports—P3574-5 / Telescoping Leg Supports—P7634

Tools required: None

Installation

1. Set the brake/steer pedal to the brake position.
2. Ensure the bed is out of the Trendelenburg position.
3. Position the foot section in a mid-height position using the foot function.
4. Position and insert the telescoping supports (A) into the mounting post (B) (see figure 7-2 on page 7-7).

Figure 7-2. Telescoping Calf Supports—P3574-5 / Telescoping Leg Supports—P7634



5. Ensure the supports are fully seated and indexed position.

NOTE:
The ball joints can be indexed inward or outward for different sized patients.

Adjustment

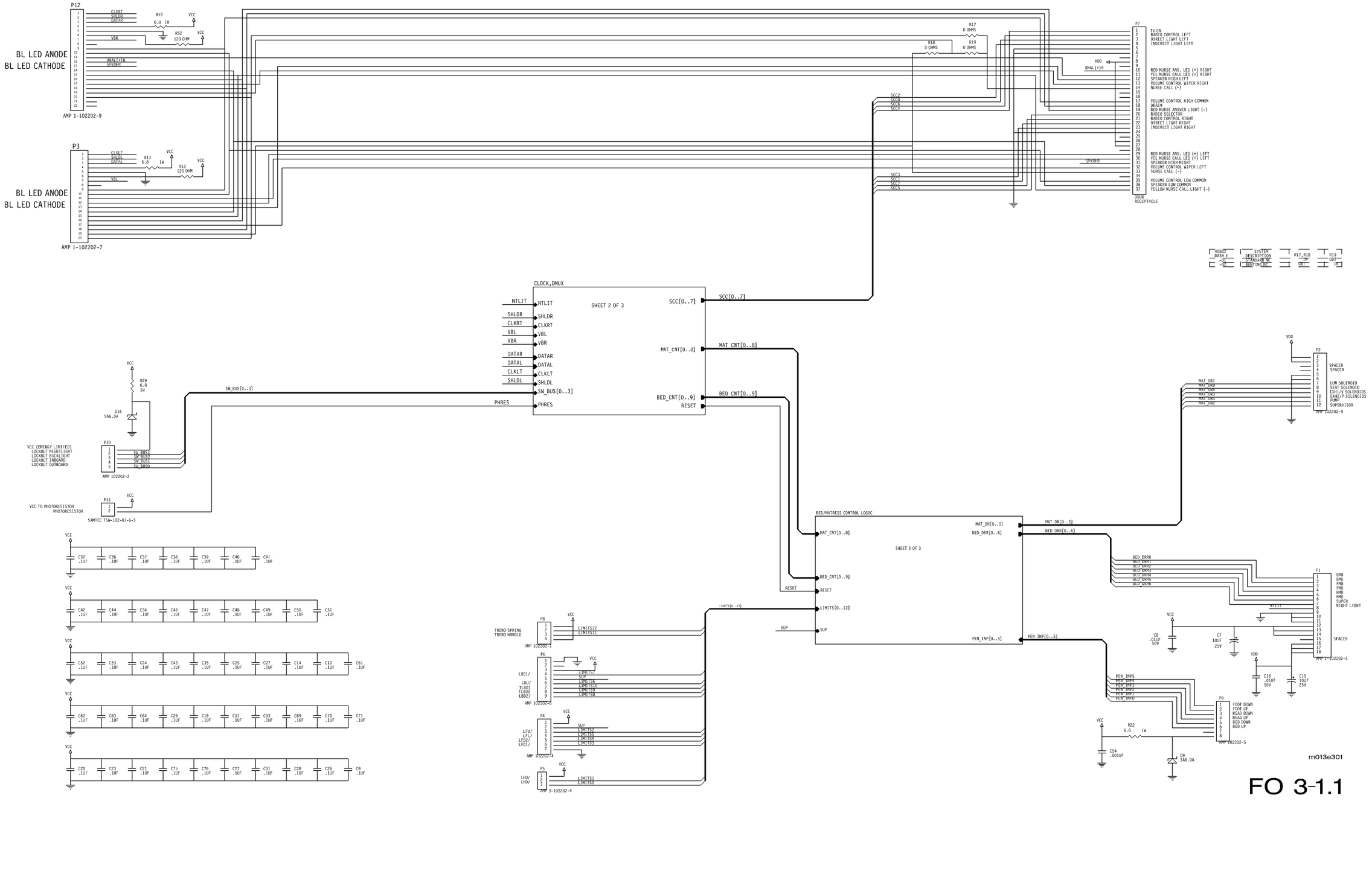
1. Loosen the swivel clamp screws (C) to allow the cradles (D) to be swiveled to the desired direction.

2. Tighten the swivel clamp screws to secure the cradles in the desired position.

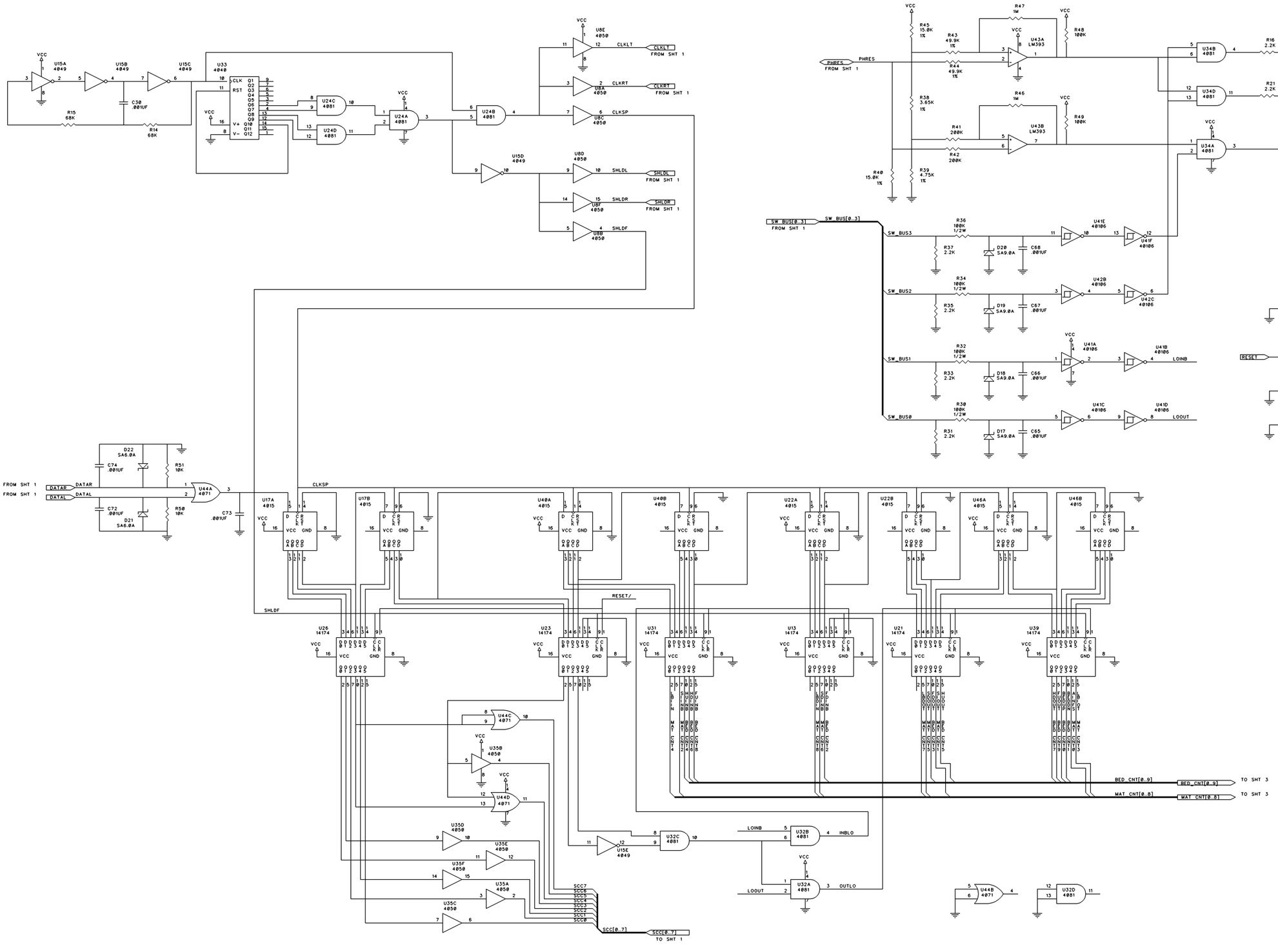
WARNING:
Insufficient tightening will allow the cradles to slip and lose its original position. Personal injury could occur.

NOTE:
The foot supports must be installed before the foot section can be used.

WARNING:
The supports are intended to be used in the prescribed manner only. Failure to use this product as outlined may result in personal injury or equipment damage.

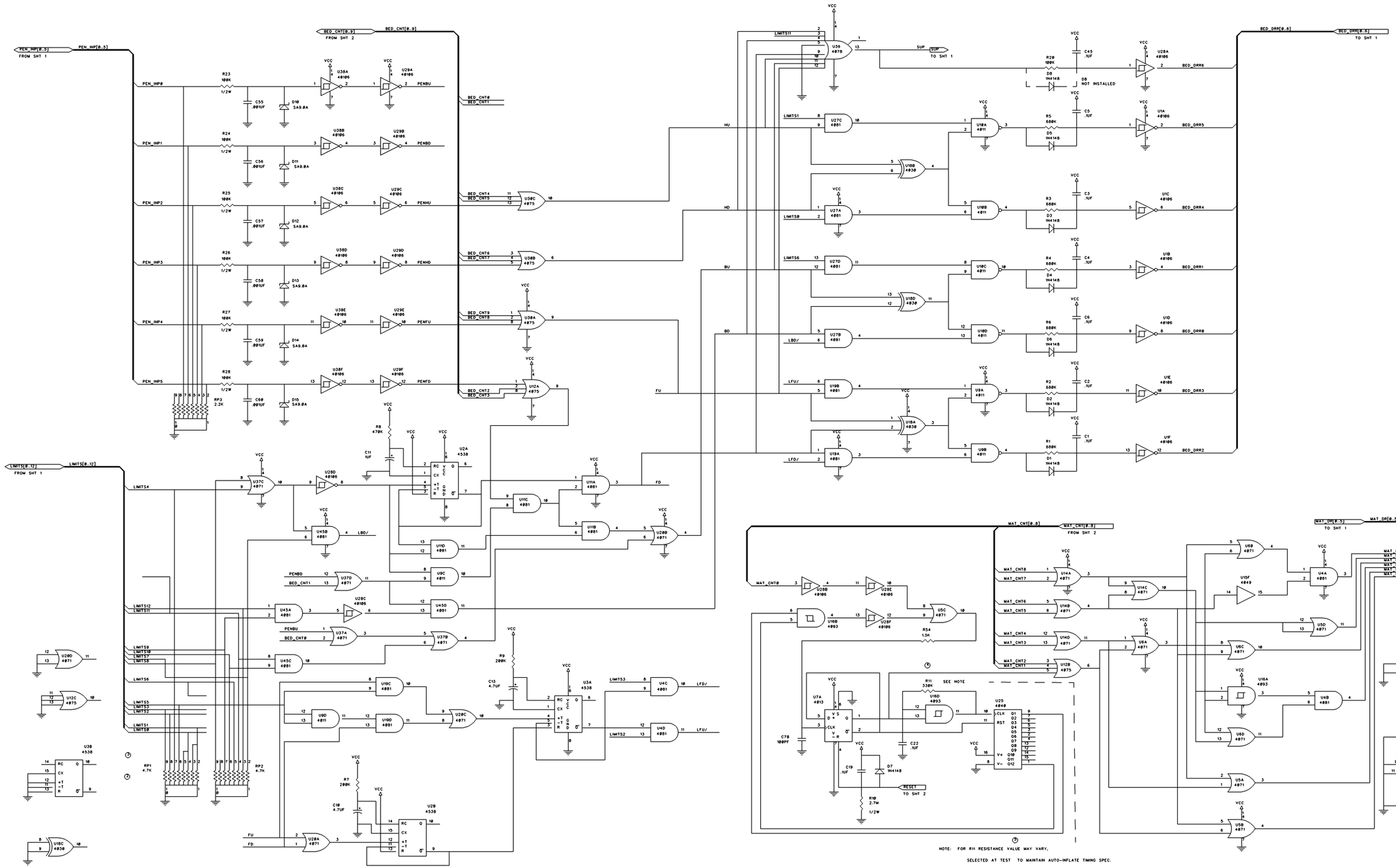

P12
BL LED ANODE
BL LED CATHODE
AMP 1-102202-9
P3
BL LED ANODE
BL LED CATHODE
AMP 1-102202-7
CLKRT
SHLDR
DATAR
VBR
R53 6.8 1W
R52 120 OHM
VCC
RNAL(+)R
SPKRHR
R17 0 OHMS
R18 0 OHMS
R19 0 OHMS
P7
TV CN
RADIO CONTROL LEFT
DIRECT LIGHT LEFT
INDIRECT LIGHT LEFT
VDD
RNAL(+)R
RED NURSE ANS. LED (+) RIGHT
YEL NURSE CALL LED (+) RIGHT
SPEAKER HIGH LEFT
VOLUME CONTROL WIPER RIGHT
NURSE CALL (+)
VOLUME CONTROL HIGH COMMON
UNUSED
RED NURSE ANSWER LIGHT (-)
RADIO SELECTOR
RADIO CONTROL RIGHT
DIRECT LIGHT RIGHT
INDIRECT LIGHT RIGHT
SPKRHR
RED NURSE ANS. LED (+) LEFT
YEL NURSE CALL LED (+) LEFT
SPEAKER HIGH RIGHT
VOLUME CONTROL WIPER LEFT
NURSE CALL (-)
VOLUME CONTROL LOW COMMON
SPEAKER LOW COMMON
YELLOW NURSE CALL LIGHT (-)
DSUB RECEPTACLE
SCC2
SCC3
SCC4
SCC5
SCC6
SCC7
SCC8
SCC9
R13 6.8 1W
R12 120 OHM
VBL
40822 DASH #
01
02
SYSTEM DESCRIPTION
STANDARD NC
BUNTING NC
R17,R18 IN OUT
R19 OUT IN
CLOCK,DMUX
SHEET 2 OF 3
NTLIT
SHLDR
CLKRT
VBL
VBR
DATAR
DATAL
CLKLT
SHLDL
SW_BUS[0..3]
PHRES
SCC[0..7]
MAT_CNT[0..8]
BED_CNT[0..9]
RESET
R29 6.8 1W
D16 SA6.0A
P10
SW_BUS3
SW_BUS2
SW_BUS1
SW_BUS0
AMP 102202-2
VCC (ENERGY LIMITED)
LOCKOUT NIGHTLIGHT
LOCKOUT BACKLIGHT
LOCKOUT INBOARD
LOCKOUT OUTBOARD
P11
AMP 1-102202-4
VCC TO PHOTORESISTOR
PHOTORESISTOR
C32 .1UF
C36 .1UF
C37 .1UF
C38 .1UF
C39 .1UF
C40 .1UF
C41 .1UF
C42 .1UF
C44 .1UF
C34 .1UF
C46 .1UF
C47 .1UF
C48 .1UF
C49 .1UF
C50 .1UF
C51 .1UF
C52 .1UF
C53 .1UF
C24 .1UF
C43 .1UF
C35 .1UF
C25 .1UF
C27 .1UF
C14 .1UF
C12 .1UF
C61 .1UF
C62 .1UF
C63 .1UF
C64 .1UF
C29 .1UF
C18 .1UF
C17 .1UF
C33 .1UF
C69 .1UF
C70 .1UF
C71 .1UF
C20 .1UF
C23 .1UF
C21 .1UF
C75 .1UF
C76 .1UF
C77 .1UF
C31 .1UF
C28 .1UF
C26 .1UF
C9 .1UF
BED/MATRESS CONTROL LOGIC
SHEET 3 OF 3
MAT_CNT[0..8]
BED_CNT[0..9]
RESET
LIMITS[0..12]
SUP
MAT_DR[0..5]
BED_DRR[0..6]
PEN_INP[0..5]
P8
TREND SPRING
TREND HANDLE
AMP 102202-1
P6
AMP 102202-6
P4
AMP 102202-4
P5
AMP 3-102202-4
P2
SPACER
SPACER
LUM SOLENOID
SEAT SOLENOID
EXH1/0 SOLENOIDS
EXH3/2 SOLENOIDS
SUPERVISOR
AMP 102202-9
MAT_DR1
MAT_DR0
MAT_DR4
MAT_DR3
MAT_DR5
MAT_DR2
P1
BMD
BMU
FMD
FMU
HMD
HMU
SUPER NIGHT LIGHT
SPACER
AMP 1-102202-5
BED_DRR0
BED_DRR1
BED_DRR2
BED_DRR3
BED_DRR4
BED_DRR5
BED_DRR6
NTLIT
C8 .01UF 50V
C7 10UF 25V
C16 .01UF 50V
C15 10UF 25V
PEN_INP5
PEN_INP4
PEN_INP3
PEN_INP2
PEN_INP1
PEN_INP0
P9
FOOT DOWN
FOOT UP
HEAD DOWN
HEAD UP
BED DOWN
BED UP
AMP 102202-5
R22 6.8 1W
C54 .001UF
D9 SA6.0A
m013e301

FO 3-1.1

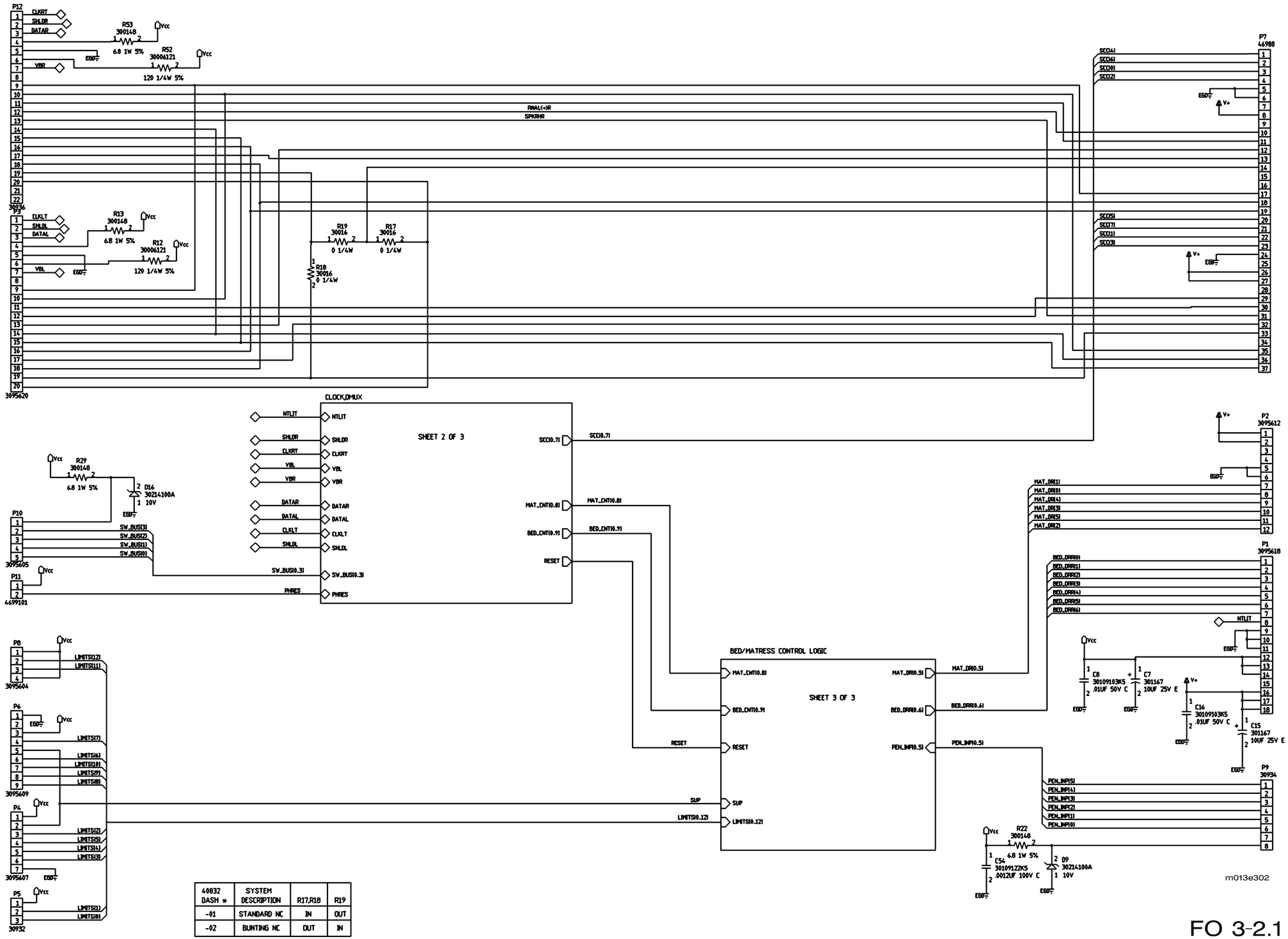


m013e308

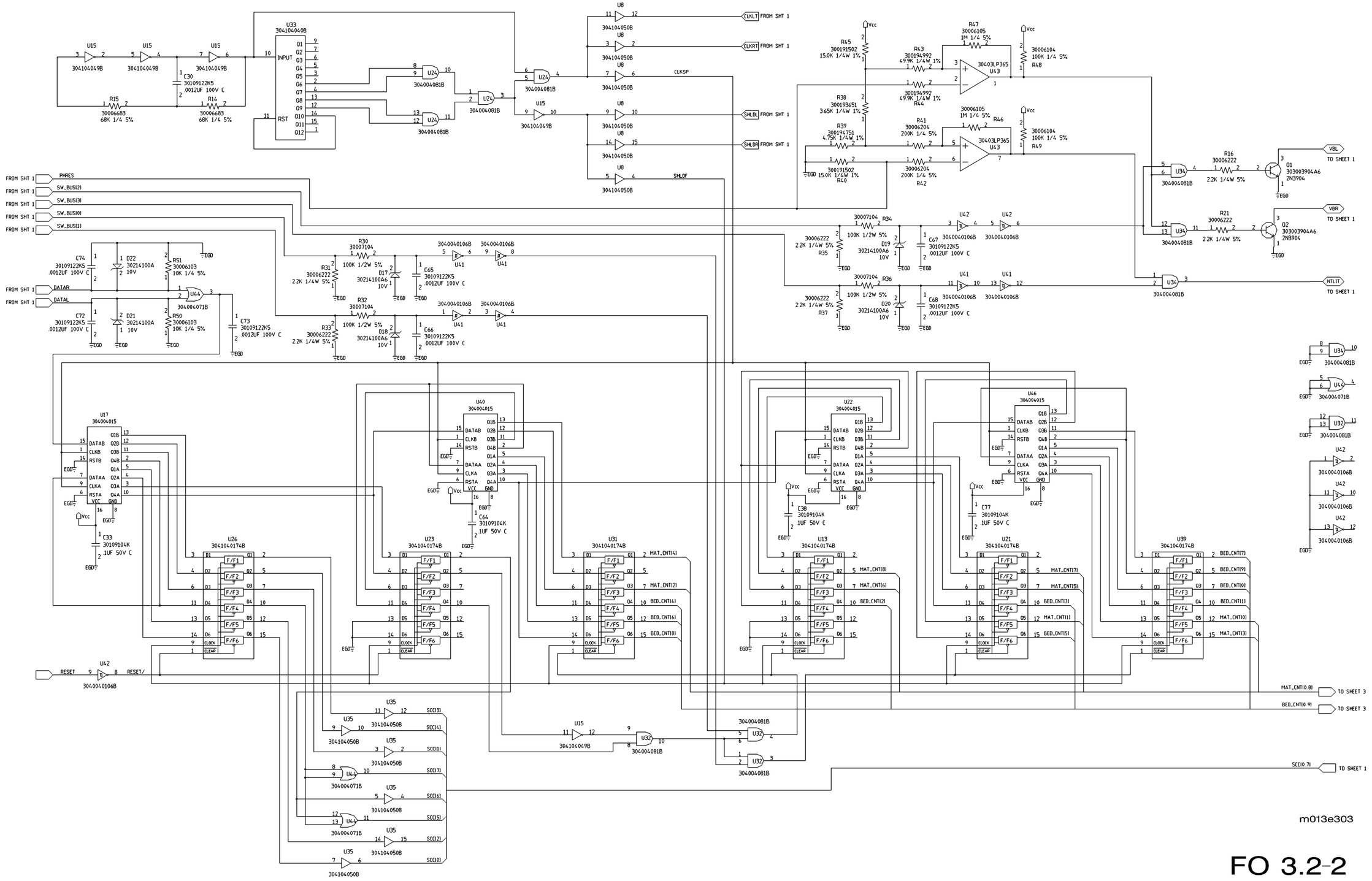
FO 3-1.2


PEN_INP[0..5]
FROM SHT 1
BED_CNT[0..9]
FROM SHT 2
LIMITS[0..12]
FROM SHT 1
MAT_CNT[0..8]
FROM SHT 2
BED_DRR[0..6]
TO SHT 1
MAT_DR[0..5]
TO SHT 1
SUP
TO SHT 1
RESET
TO SHT 2
SEE NOTE
NOTE: FOR R11 RESISTANCE VALUE MAY VARY,
SELECTED AT TEST TO MAINTAIN AUTO-INFLATE TIMING SPEC.
m013e309

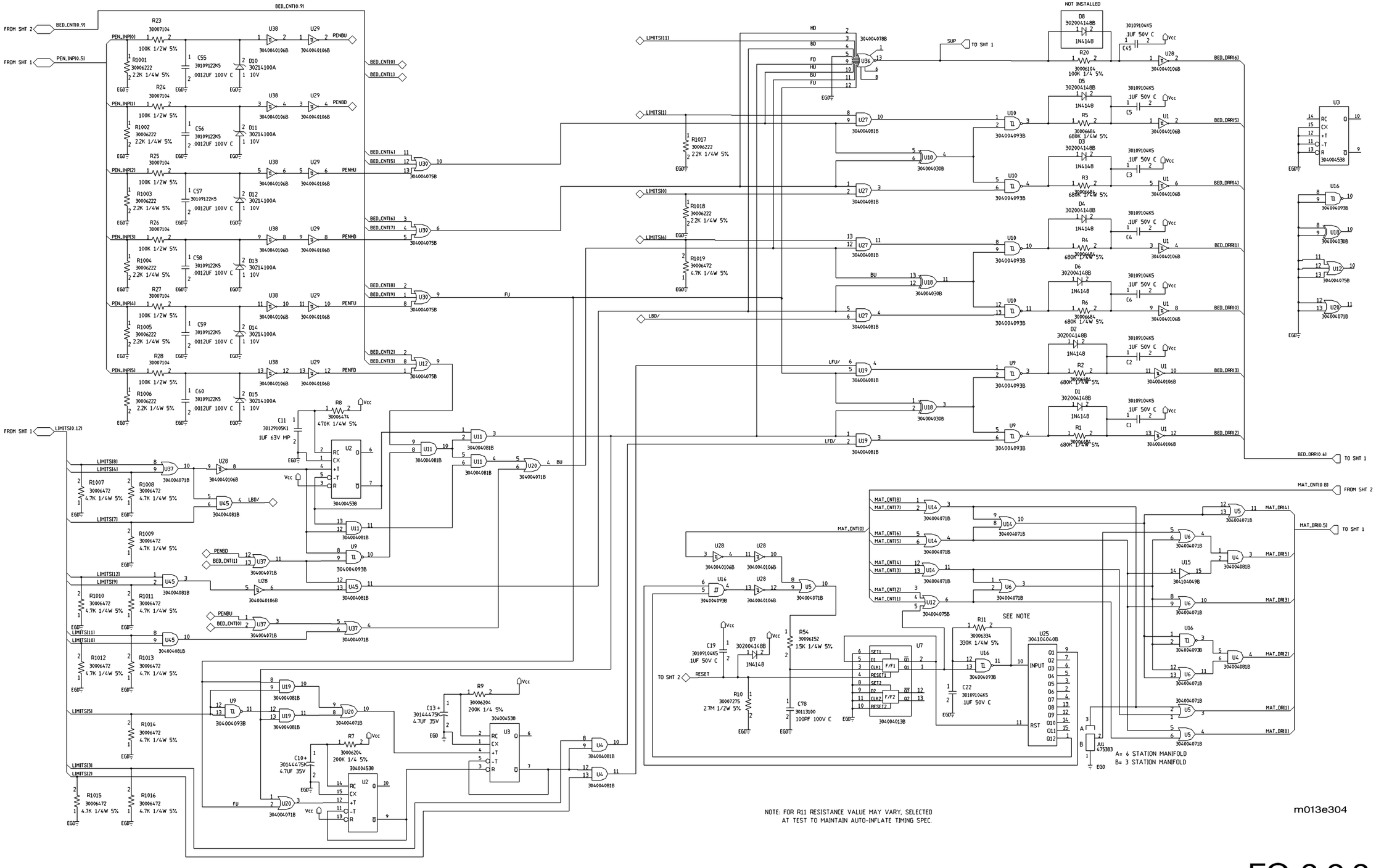
FO 3-1.3



40832 DASH #	SYSTEM DESCRIPTION	R17,R18	R19
-01	STANDARD NC	IN	OUT
-02	BUNTING NC	OUT	IN


FROM SHT 1 PHRES
FROM SHT 1 SW_BUS(2)
FROM SHT 1 SW_BUS(3)
FROM SHT 1 SW_BUS(0)
FROM SHT 1 SW_BUS(1)
FROM SHT 1 DATAR
FROM SHT 1 DATAL
CLKLT FROM SHT 1
CLKRT FROM SHT 1
CLKSP
SHLDL FROM SHT 1
SHLDR FROM SHT 1
SHLDF
RESET
RESET/
MAT_CNT(0..8)
BED_CNT(0..9)
SCC(0..7)
TO SHEET 1
TO SHEET 3
VBL
VBR
NTLIT
m013e303

FO 3.2-2


FROM SHT 2
BED_CNT[0.9]
FROM SHT 1
PEN_INP[0.5]
PENBU
PENBD
PENMD
PENFD
PENFU
R23
R24
R25
R26
R27
R28
R1001
R1002
R1003
R1004
R1005
R1006
C55
C56
C57
C58
C59
C60
D10
D11
D12
D13
D14
D15
100K 1/2W 5%
2.2K 1/4W 5%
.0012UF 100V C
U38
U29
U30
U12
U37
U45
U28
U9
U19
U20
U11
U27
U36
U18
U10
U1
U2
U3
U4
U16
U15
U5
U6
U7
U25
U26
U14
U12
U8
U17
U21
U22
U23
U24
U13
U31
U32
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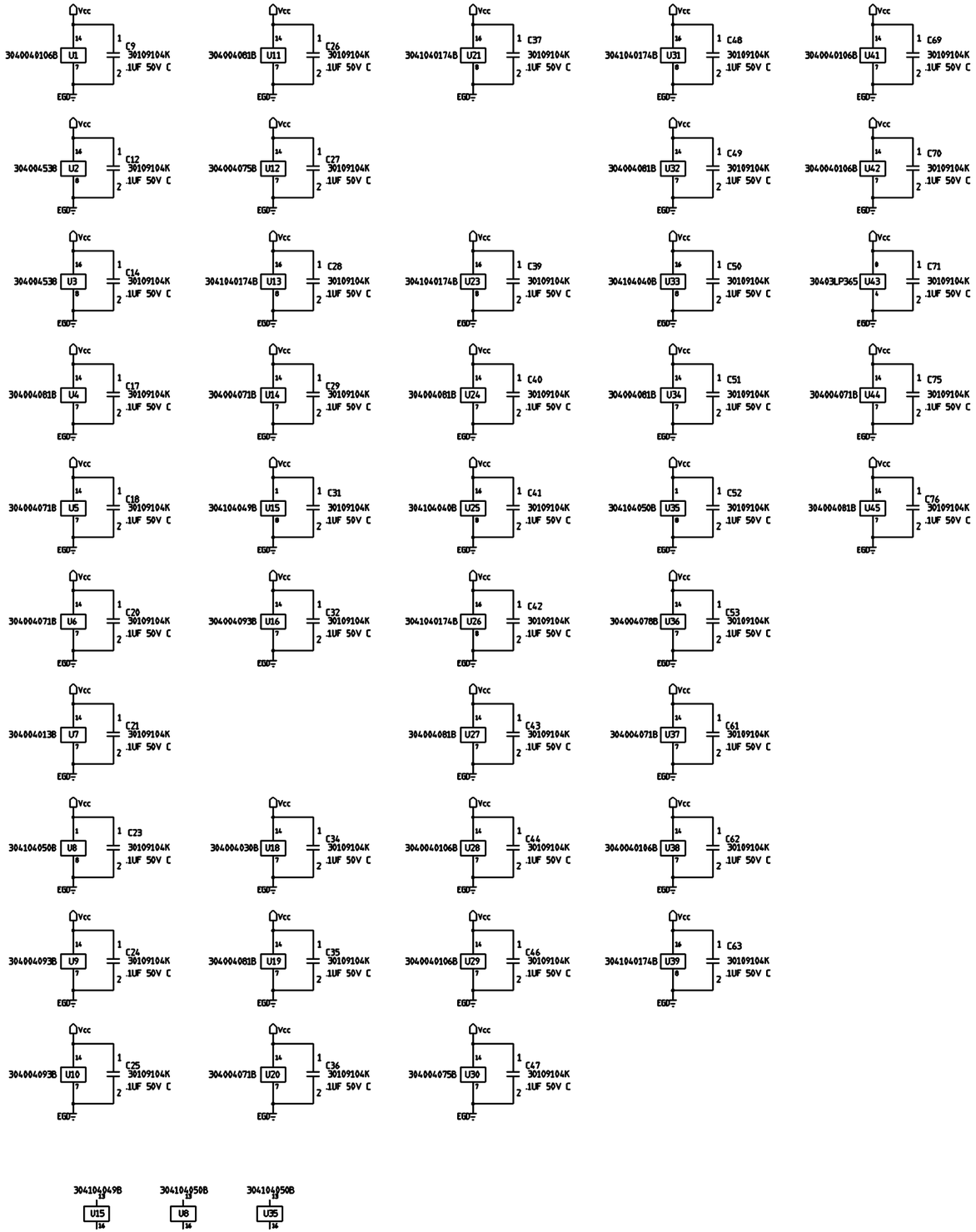
U75
U76
U77
U78
U79
U80
U81
U82
U83
U84
U85


Vcc
EGD
U1
C9
30109104K
.1UF 50V C
U2
C12
U3
C14
U4
C17
U5
C18
U6
C20
U7
C21
U8
C23
U9
C24
U10
C25
U11
C26
U12
C27
U13
C28
U14
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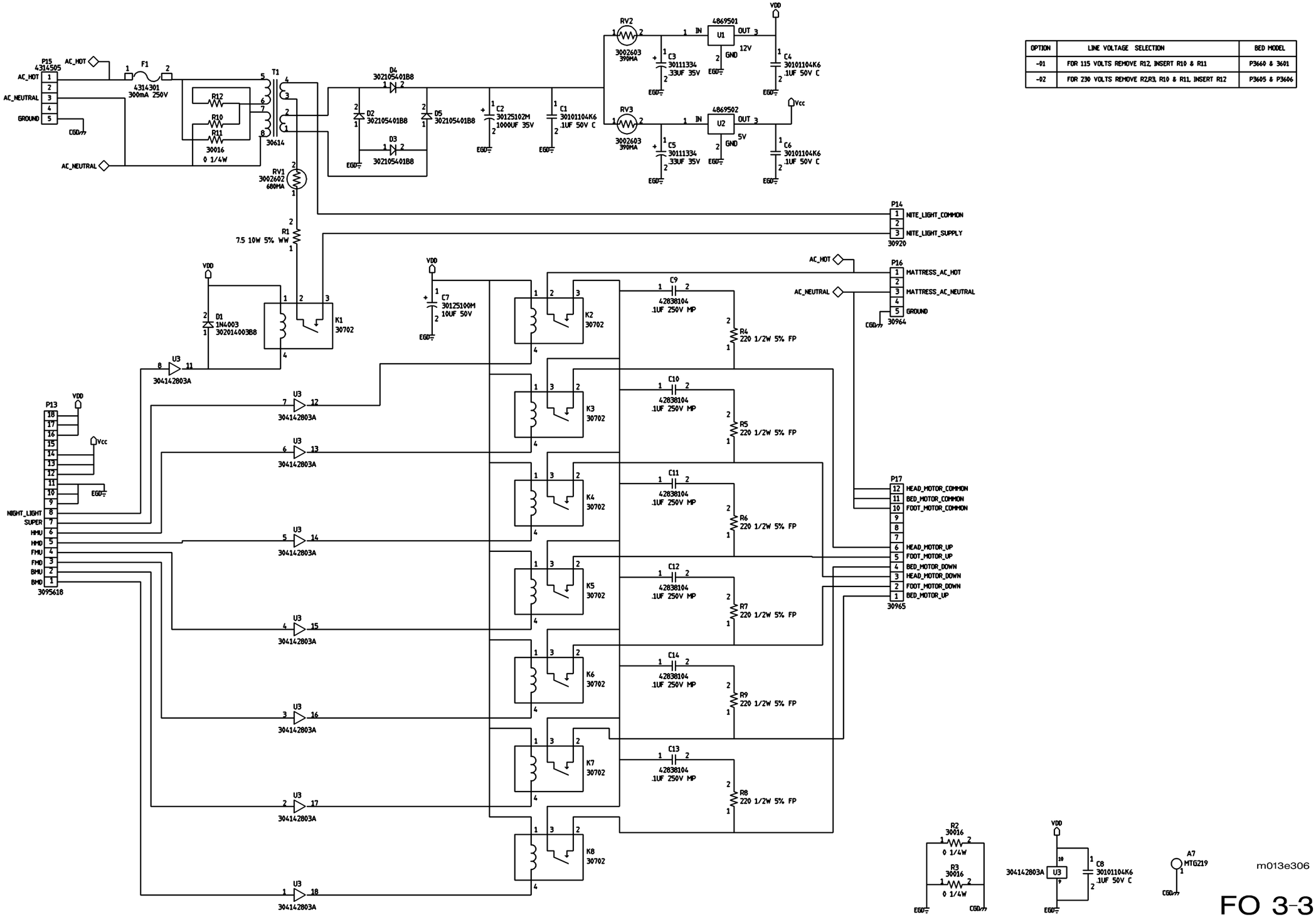
U35
C52
U36
C53
U37
C61
U38
C62
U39
C63
U41
C69
U42
C70
U43
C71
U44
C75
U45
C76
30403LP36S
304104049B
304104050B
304104050B

m013e305

Schematic Wiring Diagram—Bed Driver & Rectifier Board P/N 40843

Back to Chapter 3

OPTION	LINE VOLTAGE SELECTION	BED MODEL
-01	FOR 115 VOLTS REMOVE R12, INSERT R10 & R11	P3660 & 3601
-02	FOR 230 VOLTS REMOVE R2,R3, R10 & R11, INSERT R12	P3605 & P3606

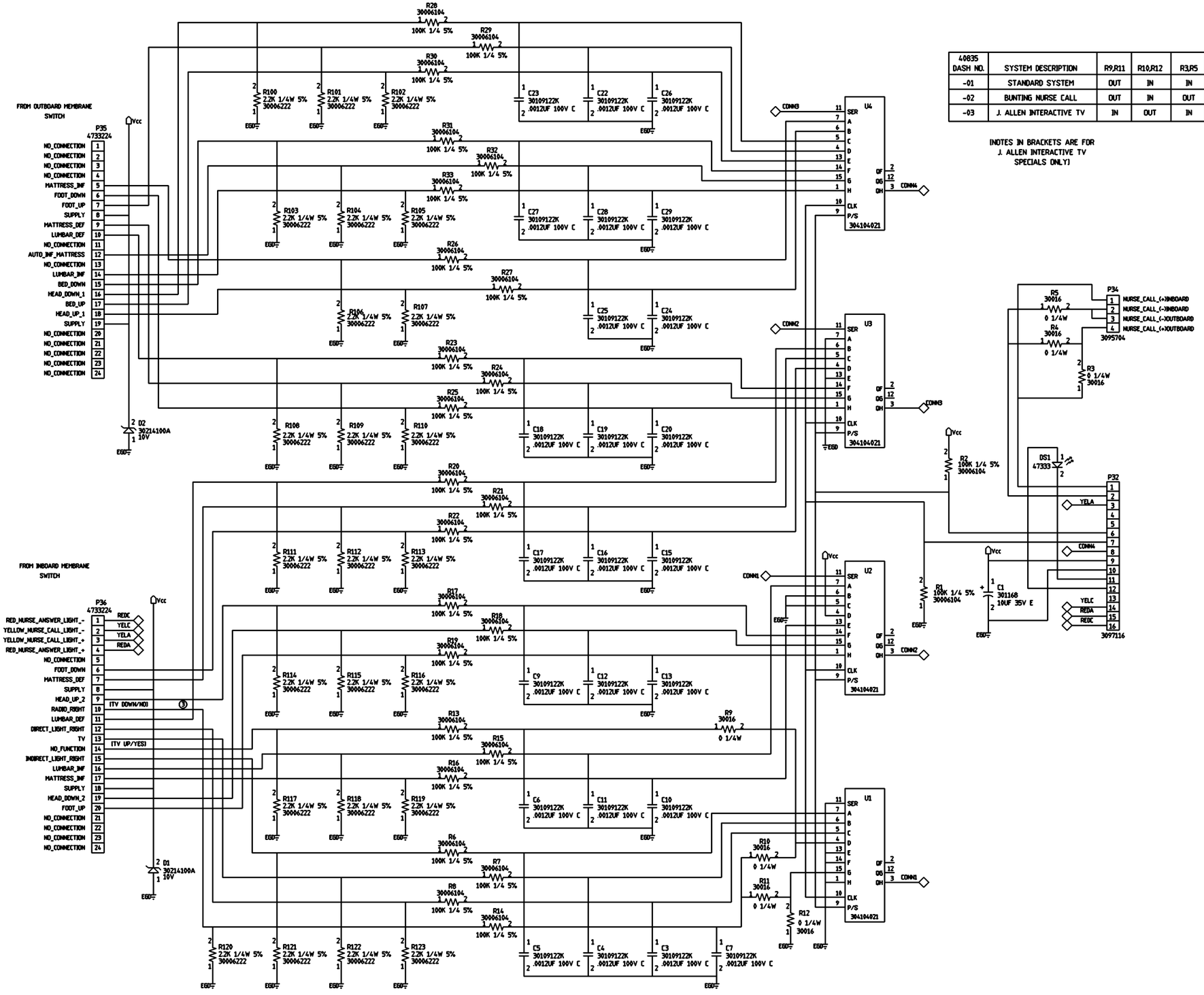


m013e306

FO 3-3

Schematic Wiring Diagram—RH Siderail Controls P/N 4083701

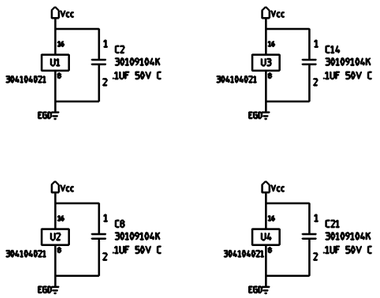
Back to Chapter 3



40835 DASH NO.	SYSTEM DESCRIPTION	R9,R11	R10,R12	R3,R5	R4
-01	STANDARD SYSTEM	OUT	IN	IN	OUT
-02	BUNTING NURSE CALL	OUT	IN	OUT	IN
-03	J. ALLEN INTERACTIVE TV	IN	OUT	IN	OUT

(NOTES IN BRACKETS ARE FOR J. ALLEN INTERACTIVE TV SPECIALS ONLY)

IC (REF. DES.)	PIN	BIT NO.	FUNCTION
U4	H	0	BACK FIRM (OUT)
U4	G	1	AUTO INFLATE-SEAT (OUT)
U4	F	2	BED DOWN (OUT)
U4	E	3	BED UP (OUT)
U4	D	4	FOOT UP (OUT)
U4	C	5	HEAD DOWN (OUT)
U4	B	6	HEAD UP (OUT)
U4	A	7	SEAT FIRM (OUT)
U3	H	8	FOOT DOWN (OUT)
U3	G	9	SEAT SOFT (OUT)
U3	F	10	BACK SOFT (OUT)
U3	E	11	"0" -LOW NO FUNCTION
U3	D	12	FOOT DOWN (IN)
U3	C	13	SEAT SOFT (IN)
U3	B	14	BACK SOFT (IN)
U3	A	15	"0" -LOW NO FUNCTION
U2	H	16	FOOT UP (IN)
U2	G	17	HEAD DOWN (IN)
U2	F	18	HEAD UP (IN)
U2	E	19	SEAT FIRM (IN)
U2	D	20	"1" -HI CHECK BIT
U2	C	21	"0" -LOW NO FUNCTION
U2	B	22	"0" -LOW NO FUNCTION
U2	A	23	BACK FIRM (IN)
U1	H	24	"0" -LOW CHECK BIT
U1	G	25	"0" -LOW RADIO LEFT
U1	F	26	"0" -LOW DIRECT LIGHT LEFT
U1	E	27	"0" -LOW INDIRECT LIGHT LEFT
U1	D	28	RADIO RIGHT
U1	C	29	DIRECT LIGHT RIGHT
U1	B	30	TV
U1	A	31	INDIRECT LIGHT RIGHT



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Schematic Wiring Diagram—LH Siderail Controls P/N 40840

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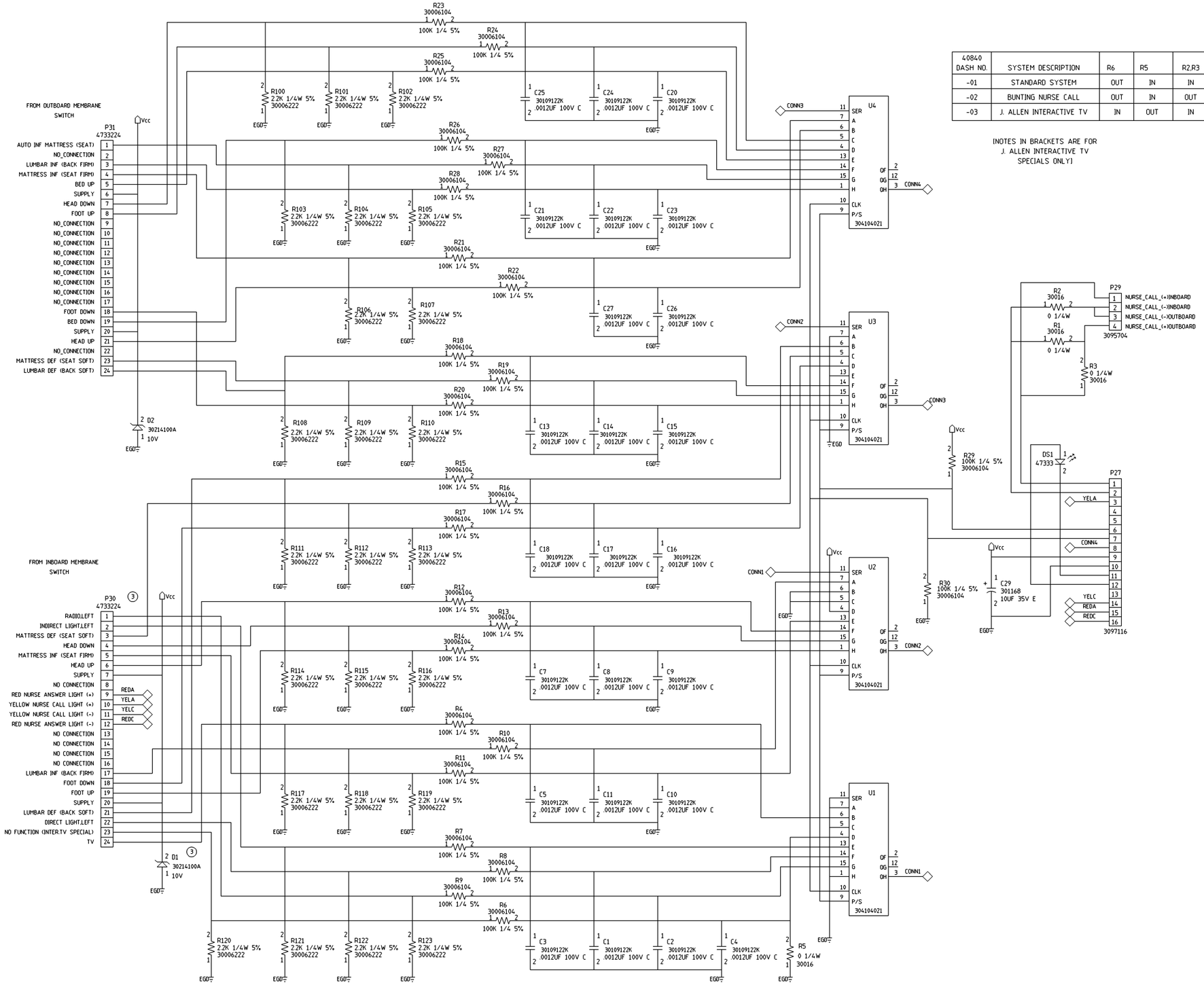

40840 DASH NO.	SYSTEM DESCRIPTION	R6	R5	R2,R3	R1
-01	STANDARD SYSTEM	OUT	IN	IN	OUT
-02	BUNTING NURSE CALL	OUT	IN	OUT	IN
-03	J. ALLEN INTERACTIVE TV	IN	OUT	IN	OUT

(NOTES IN BRACKETS ARE FOR J. ALLEN INTERACTIVE TV SPECIALS ONLY)

IC (REF. DES.)	PIN	BIT NO.	FUNCTION
U4	H	0	BACK FIRM (OUT)
U4	G	1	AUTO INFLATE-SEAT (OUT)
U4	F	2	BED DOWN (OUT)
U4	E	3	BED UP (OUT)
U4	D	4	FOOT UP (OUT)
U4	C	5	HEAD DOWN (OUT)
U4	B	6	HEAD UP (OUT)
U4	A	7	SEAT FIRM (OUT)
U3	H	8	FOOT DOWN (OUT)
U3	G	9	SEAT SOFT (OUT)
U3	F	10	BACK SOFT (OUT)
U3	E	11	"0" -LOW NO FUNCTION
U3	D	12	FOOT DOWN (IN)
U3	C	13	SEAT SOFT (IN)
U3	B	14	BACK SOFT (IN)
U3	A	15	"0" -LOW NO FUNCTION
U2	H	16	FOOT UP (IN)
U2	G	17	HEAD DOWN (IN)
U2	F	18	HEAD UP (IN)
U2	E	19	SEAT FIRM (IN)
U2	D	20	"1" -HI CHECK BIT
U2	C	21	"0" -LOW NO FUNCTION
U2	B	22	"0" -LOW NO FUNCTION
U2	A	23	BACK FIRM (IN)
U1	H	24	"0" -LOW CHECK BIT
U1	G	25	"0" -LOW RADIO LEFT
U1	F	26	"0" -LOW DIRECT LIGHT LEFT
U1	E	27	"0" -LOW INDIRECT LIGHT LEFT
U1	D	28	RADIO RIGHT
U1	C	29	DIRECT LIGHT RIGHT
U1	B	30	TV
U1	A	31	INDIRECT LIGHT RIGHT

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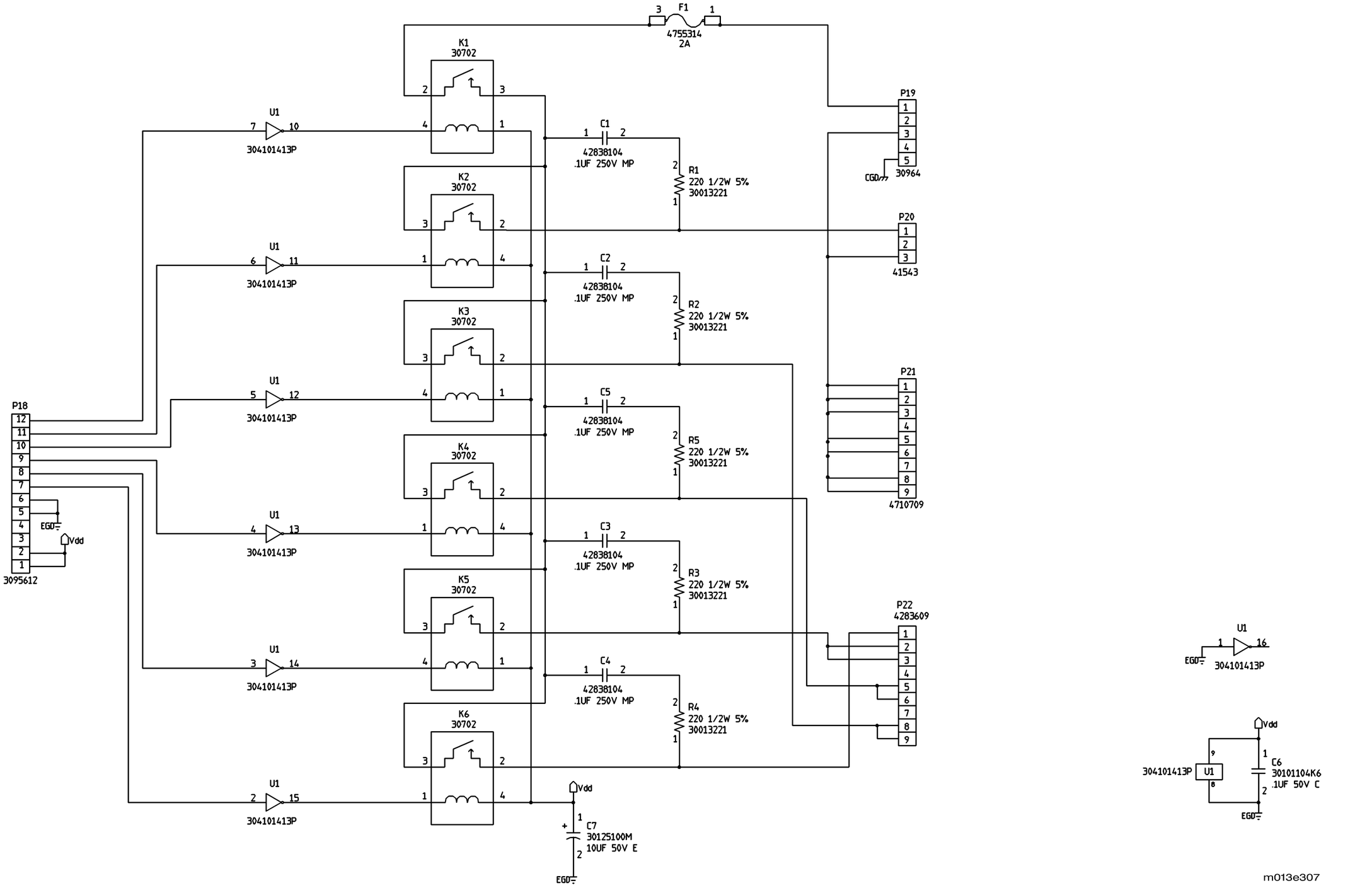
F1
4755314
2A
K1
30702
K2
30702
K3
30702
K4
30702
K5
30702
K6
30702
U1
304101413P
C1
42838104
.1UF 250V MP
C2
42838104
.1UF 250V MP
C3
42838104
.1UF 250V MP
C4
42838104
.1UF 250V MP
C5
42838104
.1UF 250V MP
R1
220 1/2W 5%
30013221
R2
220 1/2W 5%
30013221
R3
220 1/2W 5%
30013221
R4
220 1/2W 5%
30013221
R5
220 1/2W 5%
30013221
P18
3095612
P19
30964
P20
41543
P21
4710709
P22
4283609
EGD
Vdd
C7
30125100M
10UF 50V E

U1
304101413P
Vdd
C6
30101104K6
.1UF 50V C
EGD

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